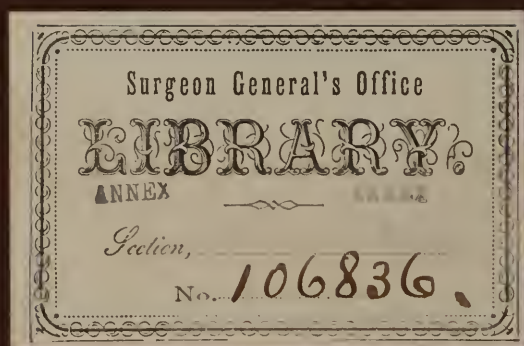






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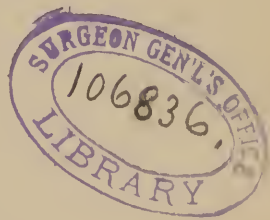
G. P. PUTNAM'S SONS

NEW YORK AND LONDON

PRACTICAL CLINICAL LESSONS
ON
SYPHILIS
AND THE
GENITO-URINARY DISEASES

BY
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AND SURGEONS, NEW YORK; SURGEON TO CHARITY HOSPITAL; CONSULTING
SURGEON TO ST. ELIZABETH'S HOSPITAL, TO THE NEW YORK SKIN AND
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MEMBER OF THE BRITISH MEDICAL ASSOCIATION,
ETC.



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TO

WILLARD PARKER, M.D., LL.D.

EMERITUS PROFESSOR OF SURGERY IN THE COLLEGE OF
PHYSICIANS AND SURGEONS,
NEW YORK.

RENOWNED AS A TEACHER, DISTINGUISHED AS A SURGEON,
EMINENT AS A CITIZEN, UNIVERSALLY BELOVED
FOR HIS NOBLE NATURE AND HIS
GENEROUS ACTS,

This Work,

WITH HIS CONSENT, IS GRATEFULLY AND AFFECTIONATELY
DEDICATED BY ONE, AMONG THE MANY, OF HIS
MEDICAL BRETHREN, WHO OWE TO HIM—
NOW FULL OF YEARS AND HONORS
—THE GREATEST MEASURE
OF THEIR
PROFESSIONAL SUCCESS.

PREFACE TO THE STUDENTS' EDITION.

THE students' edition is published by the author simply because the former edition is exhausted, and the book is now practically out of print. On account of business embarrassments of the former publishers, the stereotype plates of the book came recently into the author's possession by purchase.

It was the original intention of the author to have made in a second edition some changes in the arrangement of the material, and to have added important matter on the subjects of Hereditary and Infantile Syphilis, and of Genito-Urinary Reflex Irritations, as well as to have added chapters on Diseases of the Prostate and Stone in the Bladder, not included in the first edition. These proposed changes have required more time than was anticipated or could be spared at present from the requirements of necessary professional labor. It is now proposed that Messrs. Geo. Putnam's Sons issue, some time during the present year, the regular second edition, from new plates, with the additions above referred to, and numerous new illustrations. In the meantime, in order that the object of the work, as especially set forth on page 9 of previous edition, shall not be even temporarily interfered with, the author has arranged with Messrs. Putnam's Sons to print at once a Students' Edition, and that it may be within the reach of all who desire it, at a price simply covering the cost of publication. The author's interest in it will be compensated for by his satisfaction in knowing that those who are especially interested in his views and methods of practice in Syphilis and the Genito-Urinary Diseases will be able to make themselves more familiar with them than would be possible in his Clinique, at the College of Physicians and Surgeons, or in the wards of Charity Hospital.

F. N. OTIS.

No. 5 WEST 50TH STREET,
NEW YORK, *Jan.*, 20, 1886.



PREFACE.

For a number of years it has been my custom, to distribute, from time to time, to the students of the College of Physicians and Surgeons, short papers, of a few pages each, which were entitled "*Class-room Lessons.*" In these I endeavored to embody important principles, in the study of syphilis and the genito-urinary diseases. The lessons were intended to prevent errors, arising from inattention, or from misunderstanding of the statements made during the lectures in the college, and at Charity Hospital. This was rendered especially necessary, from the fact that my own views, on certain important points, differed, essentially, from those embodied in the text-books in general use. In the first place, on the subject of syphilis: I had been unable to accept the statements of all authorities, that it was a mysterious, instantaneous, poisoning of the organism, in defiance of all known physiological and pathological laws. A careful study of the matter, in connection with modern discoveries in physiology and pathology, had convinced me, that an explanation of all the lesions and manifestations of syphilis was possible, through known physiological and pathological processes, and that, the then universally accepted view of the supernatural advent and behavior of syphilis, was incorrect. This position was taken, in my lectures in the college, in 1868. In 1870, it was presented to the medical profession, in a paper before the Medical Society of the county of New York, and was followed by another paper, on the same subject, in 1871. Up to that time, no systematic effort had been made to explain the various manifestations of syphilis, on a scientific basis. In 1866, Beale had claimed, from his investigations of variola and the cattle disease, the

presence of a germinal cell, as a cause of syphilis. Beisiadecki, of Krakow, had published, in 1867, the results of his microscopical examination of infecting chancre, in which he showed a localized proliferation of cell elements in the lymphatic vessels, as a starting-point in syphilis, and claimed that this *might* afford an explanation, through which the general infection might be explained. I took up the matter at this point, and through the results of pathological and histological researches of accepted authorities in pathology and histology, in other fields, succeeded, as I believed, in explaining the various syphilitic phenomena throughout the entire course of the disease. A review of my papers, in the *London Lancet* of Nov. 9th, 1872, concluded with the statement that "these new views on the physiology of syphilitic infection are not based upon the results of any experiments or new facts, or on the unravelling of observations. They consist mainly of deductions drawn from a close and elaborate reasoning on the acknowledged features of syphilis in connection with the latest doctrines and hypotheses of certain pathological teachers." Starting with the disease-germ, derived from the degraded human germinal cell of Beale, supported by the microscopic examinations of Beisiadecki and Verson, as to the proliferation of new cell material at the site of syphilitic inoculation, and extending only in the line lymph channels; supported still farther by the clinical facts, in regard to gradual implication of lymph vessels and glands, by the known physiological processes in health, and under the influence of syphilitic infection, and also through the concurring testimony of such histological and pathological authorities as Chaveau, Beale, Schweiggerseidel, Stricker, Kolliker, Teichman, Kohn, Conhiem, Beisiadecki, and others, I was enabled to present a reasonable explanation of the course of syphilis, from its inception to its termination. It was scarcely to be expected, that such a radical departure from the views of the text-books, would be received without discussion; but the position taken was so amply supported by all known physiological and pathological facts, that no opposing arguments were offered.

The first authoritative publication in America which followed, practically adopted and supported the new views thus: (Bumstead and Taylor, N. Y., 1869, 4th ed. page 443) "The secretions of syphilitic lesions are found to consist of a serous fluid containing numerous granules or molecules, *which are masses of protoplasm or germinal matter holding the contagious properties of syphilis*. These microscopic bodies are probably taken into the circulation by the lymphatics, and conveyed over the body. . . In the secondary period of syphilis these *cells* are very numerous, and the body may be covered with papules and tubercles *composed of them*. . . As the disease wanes . . the cells no longer have a tendency to reproduction which characterizes them in the early stages, but rather degenerate. *Hence we consider the blood and the secretions in tertiary syphilis innocuous.*" *

The same views of syphilitic infection were presented in the second edition of Berkeley Hill's work, by Berkeley Hill and Arthur Cooper, London, 1881 (p. 75), and erroneously attributed to Auspitz of Vienna (although in a foot-note the reader is referred, for further information on the subject, to my work on the Physiological Pathology and Treatment of Syphilis) thus: "The syphilitic virus enters the system by the absorbents. It first sets up plastic growth in the walls of the lymphatic vessels at the part where it is implanted. These walls thicken and throw off into their interior, *cells which contain the virus*; as these cells float along they convey the virus still further inwards. But the infiltration of successive parts of the walls of the lymphatic vessels also conducts the virus inwards. When a lymphatic gland is reached, the same proliferating process ensues in the gland, until the cells are sent off through the efferent ducts to other glands, and so on to the thoracic duct. Thence cells, containing the virus, are poured, direct into the circulation, by the veins, and are thus quickly carried to the several tissues of the body. *Then appear the signs of general constitutional infection.*"

* Italics my own.

Again, in the work of M. Cornil on syphilis (Paris, 1878), translated and edited by Profs. Simes and White, of the University of Pennsylvania, "with the consent and approval of the author," and published in 1882, this same view of the mode of syphilitic infection, is extracted from my book, preceded by a statement (p. 21) of opinion that, "*it presents fewer inconsistencies than any of the other theories;*" and on page 23, "that it seems impossible, in the light of certain well-known facts, to deny that the syphilitic poison gains access to the general circulation, *chiefly*, if not entirely, by the lymphatics;" and again, page 25, "the action of mercury in relieving the early symptoms, also becomes intelligible in the light of this theory, through its influence in hastening destructive metamorphosis and bringing about fatty degeneration; and its general undoubted tendency to relieve tissues encumbered with superfluous material. Small doses, most naturally, first influence newly-formed immature deposits, such as those due to syphilis, and hence the advantage of the modern treatment, which avoids salivation, due to the toxic action of the drug on the *healthy* tissues, and depends upon moderate, long-continued doses. The necessity for the use of iodide of potassium, in the later stages, with or without mercury, also becomes apparent, when it is remembered that iodine is the most powerful diffusible stimulant of the function of absorption, with which we are acquainted, and that also, it has a certain established value, in hastening tissue change, especially in unhealthy formations."

In view of the direct, or implied, approval of my position, by these recent eminent authorities in matters involving the nature, behavior, and treatment of syphilis, it has seemed proper that I should make use of every opportunity to advance these views, and to explain, on physiological and histological grounds, the various points in the diagnosis and treatment of cases of syphilis and its sequelæ, herewith presented.

In the second place: Early in my clinical teaching, I had found myself unable to accept the conventional views, held by authorities on many important points in genito-urinary diseases. Especially as to the nature

and treatment of gonorrhœa and urethral stricture and the normal urethral calibre. As to the latter, I could not accept the standard universally taught, but claimed, from actual measurements, an individuality for every urethra, a *proportionate relation*, between the size of the urethra and the organ in which it is situated, and an *average* calibre, much greater than previously estimated. I also claimed, contrary to all previous teaching, a radical cure of urethral stricture, through *complete division*. These views, and others growing out of them, involving important questions in practice, supported by several hundreds of practical examples, defended in written and in oral debate, against eminent authorities in this country and in Europe, made it especially necessary for me to have a medium of communication with students, which could not be misinterpreted or misunderstood. With an especial view to this, the second volume of this work was suggested. No attempt has been made to make it a systematic general exposition of genito-urinary diseases. The aim has been, chiefly, to present clinical cases, selected as typical and practical, which have been subjects of observation and study, in my private practice, and in my clinics, and such additional material illustrative of important practical points, and my own experience in the treatment of such cases, as I could readily command. When some learned and not too busy surgeon, in gathering, from every quarter, the material for a full and systematic treatise on genito-urinary troubles, meets the everyday experiences which have been presented in the foregoing pages, it is my ambition, that some points may be found among them, which will be considered worthy of preservation, in more pretentious form. Meanwhile, I trust that many surgeons may find, in the cases recited, and in the principles and treatment advocated, a key which will help to explain much that has heretofore appeared obscure, and difficult of management.

F. N. OTIS.

NEW YORK, 108 West 34th Street, April 30, 1883.

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PRACTICAL CLINICAL LESSONS

ON

SYPHILIS AND THE GENITO-URINARY DISEASES.

LESSON I.

Nature of Gonorrhœa—Of Chancroid—Of Syphilis—Infective Principle of Syphilis a living Germinal Cell—Its History dating back over 2000 Years B.C.—Syphilis never of Spontaneous Origin—Always Acquired from a Human Being suffering with Syphilis—Always Requiring a Breach of Surface for its Introduction—The Virus of Syphilis not an Irritant—The so-called Incubation of Syphilis—Its Practical Importance—Admixture of Syphilitic Secretions with Vicious Uterine Secretion a common cause of error in Diagnosis—The Initial Lesion of Syphilis due to a Localized Cell Proliferation—Not Necessarily resulting in an open Lesion—Clinical Cases illustrative of the Development of the Initial Lesion of Syphilis—Treatment by Excision.

GENTLEMEN: Through the light of modern teaching and experience, we recognize *three* separate and distinct contagious diseases resulting from venereal contact; viz., *Gonorrhœa*, *Chancroid*, *Syphilis*.

1st. GONORRHŒA.—A vicious, non-specific inflammation of mucous membrane, characterized by free purulent secretion without ulceration, chiefly occupying the urethra of the male, and the vagina and urethra of the female; exceptionally, the mucous surfaces of the bladder, the eye, the nares, the rectal and buccal cavities; usually, though not necessarily, of venereal origin; its contagious property transferred to sound mucous membrane without breach of tissue; its action immediately following contact; its vicious principle incapable of

transmission through the general circulation; its occurrence predisposing to subsequent attacks.

2d. CHANCROID.—An acute, contagious ulcer of venereal origin, whose contagious property is incapable of contaminating the blood, and hence can never establish a constitutional disease, nor be acquired by hereditary transmission; is characterized by an acute ulcerative action, with free suppuration; is commonly initiated through a breach of surface, but possibly occurs upon sound tissue; is usually multiple, and may occur repeatedly in the same individual.

3d. SYPHILIS.—A specific, contagious, constitutional disease, caused by the inoculation, upon any part of the human body, of a peculiar principle or *contagium* called the *Syphilitic virus*, which, after an indefinite period of apparent rest, or so-called incubation, produces, at the point of inoculation or entrance of the *contagium*, a characteristic lesion; this followed by another period of apparent rest, to which succeeds a group of well-established evidences of the contamination of the general system. The characteristic initial lesion is usually solitary; sluggish, and non-suppurative in its development; inoculable with difficulty upon the person bearing it; and as a rule occurs but once in the same individual.

During the course of clinical lessons which we inaugurate to-day, I propose presenting to you cases of each one of the above-named diseases, under a variety of circumstances and in different phases of their development. However ample the field from whence clinical cases are drawn, it is scarcely possible always to secure such a choice as will permit the pursuance of a rigidly systematic arrangement in their presentation; I shall, however, endeavor to select the cases so as to show you the consecutive manifestations or lesions of each disease, as far as circumstances will allow.

To-day I purpose presenting to you a number of persons exhibiting one or more phases of the most important of the three diseases just mentioned, viz., *Syphilis*. This disease is produced by the inoculation of a specific virus upon any part of the human body, as previously stated. Of the origin, nature or composition of

this virus—vital, physical or chemical—we know practically but little.

The microscope has been brought into requisition by distinguished experts through the last quarter of a century, with the expectation of isolating and analyzing this so-called virus, but it has eluded all search. Similar investigation as to the origin of such contagious diseases as variola, vaccinia, relapsing fever, and the cattle-plague,* have resulted in establishing the fact that a degenerated, living, germinal cell contains the infective principle or *contagium*, the so-called virus, through which these diseases are communicated. Beale was the first to claim that a similar origin would be found for syphilis, but he failed to make the actual discovery. As we proceed, however, it will be found that much valuable circumstantial evidence will be met, in corroboration of Beale's view, and afford a possible interpretation of the syphilitic processes in harmony with recognized physiological and pathological laws.

Of the history of syphilis so much has been written that I have not the time, if I had the inclination, even to epitomize the labors of syphilitic historians. I will briefly state that books have been written to fix its origin at about the fifteenth century, attributing it to the effects of excesses in camp at the Siege of Naples, 1494; others to prove that it originated in America, and was carried to Europe by Columbus at about the same period; others, again, and with more reason, assert that Moses, the great Jewish lawgiver, knew about it; and the dispute as to the bad eminence of having originated syphilis ran high, and higher, involving poets, historians and doctors, getting up no end of bad blood, until a recent time (1863), when a Frenchman, Capt. Dabry by name, in translating a very ancient record of Chinese medical lore, found this same syphilitic disease thoroughly described in its various stages as existing and flourishing over two thousand years before the Christian era.

Its antiquity, and its prevalence to a greater or less

* Beale on the Nature and Origin of Disease Germs.

extent in every known country, enable us safely to affirm that it has not been from lack of opportunities to study the development of syphilis that its constituent elements are unfamiliar to us. On the contrary, it has been observed with probably more care, with more scrupulous nicety, with more laborious and painstaking accuracy, than any other disease with which the human race are, or ever have been, afflicted. It has not only been studied and observed by the keenest, the most erudite, the most profound practitioners and philosophers the medical profession has ever produced, but it has been the altar upon which not a few have offered up their own bodies as subjects of scientific experiment, throwing health—even life itself—into the investigation of this foulest and most terrible disease. With the great John Hunter heading the list, fully half a score of recorded names attest the courageous self-abnegation, the grand enthusiasm of our professional brethren in the past, whose labors and sufferings furnish us to-day with all-important and indisputable facts concerning the evolution and development of syphilis. Through such earnest investigations, and by extended observation of the disease as accidentally acquired, it has been accepted—

1st. That syphilis is never of spontaneous origin; that no emanations from natural causes, no admixture of diseased conditions, no intermingling of necrotic elements, no combination of vicious indulgence, is capable of establishing this disease *de novo*. It has always and invariably as a starting-point a human being suffering with syphilitic disease. Every syphilitic has contracted his syphilis from some antecedent syphilitic—has received into his blood a virus or *contagium* which has circulated in the blood of another suffering with syphilitic disease.

2d. That for its introduction into the human system it requires a breach of surface—a solution of continuity; that it is not absorbed through sound tissues; that it is not acquired through inhalation. An entrance of the syphilitic principle always requires a pre-existing artificial port of entry. This may be accepted as an unvarying

rule as regards the *acquisition* of syphilis. The child may contract the disease *in utero* from the diseased blood of the mother. The mother may, it is claimed (not proven), become infected through the child in her womb, diseased by the influence of the male parent. These possible exceptions do not invalidate the spirit of the law requiring a breach of continuity for the entrance of the syphilitic virus into the human organism.

Though the constituent elements of the syphilitic virus are not known, this much we do know, viz., that the secretion emanating from a certain well-recognized kind of sore,—which we call the chancre, or the initial lesion of syphilis,—when introduced, by the aid of a lancet, under the cuticle, or applied to an abraded surface anywhere upon a healthy individual, produces, after a definite period and with absolute certainty, a lesion presenting similar characteristics, and is followed by certain other evidences of a contamination of the system which cannot be produced by any other known agency.

We know also that the aforesaid secretion in which the virus is hidden, when free from extraneous matters, is of a bland, unirritating nature in its local action upon living tissues; that, introduced through an artificial puncture or an accidental abrasion, it gives no immediate token of its power—it does not in any way interfere with the natural, rapid and complete healing of the wound. In this particular there exists a radical difference between the syphilitic virus and that of the local contagious ulcer called the *Chancroid*, and of the purulent secretion of a *Gonorrhœa*; both of which produce an *immediate* inflammatory action on the site of their initiation.

Given, then, a case in which the syphilitic virus has been introduced into the system through a puncture or an abrasion and has been succeeded by a complete healing of the wounded part, let us consider what follows.

1st. A period of incubation, so called,—a period of apparent rest; a period during which the subject of the experiment is entirely free from the least evidence of the introduction of the poison into his economy, either

at the point of inoculation, or through any constitutional disturbance or internal or external sensation of any description whatever.

No feature in the development of syphilis is of more practical importance than this period of apparent incubation. A failure to appreciate it is fraught with discomfiture to both physician and patient. Lulled into a false security by the healing of a lesion following an illicit venereal contact—even assured of freedom from disease by his medical adviser—many an unfaithful benedict returns to his marital allegiance, only to realize the disaster after an innocent wife has been infected with syphilis, and through her the disease, it may be, transmitted to a luckless embryo.

The period of apparent incubation, according to authorities, varies in different subjects from ten to seventy days. The causes of this variation are not well understood. It is supposed by some to depend upon the degree of activity of the particular specimen of virus inoculated; by others upon some peculiar condition or idiosyncrasy of the subject. The fact, however, that in the great majority of cases of experimental inoculation of the virus, from whatever source, the results are much more uniform, being seldom less than eighteen nor more than thirty-five days, would lead to the belief that other influences than quality of the virus or peculiarity of the individual affects the term of *apparent* incubation. Experiments in regard to the contagiousness of non-specific pus have demonstrated its erosive property under certain conditions. Secretions from a diseased uterus, and even from the Schneiderian membrane, are known to produce excoriation of sound mucous tissues and of integument, and even to set up a true ulcerative process. We may then easily admit the possibility of admixture of the simple non-irritating secretion from an intra-vaginal syphilitic lesion with secretion from a diseased uterus, capable of effecting a solution of continuity in sound tissue; the time required for such an effect varying with the degree of irritant power and the condition of the part to which it is applied. Thus, in the folds of integument upon the penis,

where heat and moisture are at the minimum, with even a decidedly vicious secretion, many days might elapse before the dry cuticle would be eroded sufficiently to afford entrance to the accompanying syphilitic poison; or, on the contrary, should the secretion be applied to the moist delicate lining of the prepuce, the solution of continuity would be greatly facilitated. Again, in case of fracture of the skin or mucous membrane, ulcerative action might be set up coincidently with the vicious contact; and yet in neither case would the lesion be due to or indicative of the presence of the syphilitic virus. And this fact, that the syphilitic virus *may* be associated in the same individual with vicious uterine secretions, and *also* with the specific secretions of chancroid capable of effecting a solution of continuity in sound integument or mucous membrane, naturally leads to frequent errors in diagnosis. There is, I repeat, absolutely nothing in the condition of the patient, at the point of entrance of the syphilitic poison, or at any other point, which can be considered a proof of syphilitic infection, until the termination of the (so-called) period of incubation. And this time is announced by a peculiar change in the condition of the tissues *at the point of entrance of the virus, and nowhere else*; this change, too, occurring equally whether an abrasion or ulceration has been previously established at this point by other causes, or when the healing has immediately followed the introduction of the virus. An exudation or development of cellular and fibro-plastic material takes place in the tissue at the point of entrance of the *contagium*; and this process results in an *induration* perceptible to the touch, and establishes a well-defined characteristic mark of syphilitic infection. This, under the microscope, is found to consist of lymphoid or germinal cells apparently accumulated and *proliferated in loco*, as a direct result of the syphilitic inoculation. The excessive localized proliferation of cell elements constitutes a marked feature in every stage of syphilis. Its first appearance at the site of entrance of the poison forms the initial lesion, or the first positive manifestation of the syphilitic influence. The

course and duration of the initial lesion varies in different subjects, in some cases appearing as a nodule covered by sound cuticle or mucous membrane, varying from a slight increase in thickness to a distinct cartilaginous nodule as large as a pea. It may remain stationary for a time, and then terminate in resolution—that is to say, undergoing fatty degeneration, become quietly absorbed; or it may take on a more active process, involving the destruction of the overlying tissue and an acute disintegration of its elements; carrying away with them a certain limited amount of the original cellular tissue involved in its meshes, and producing an ulcer-like lesion, but which, however, is independent of true ulcerative action; its secretion thin and serous, made up, not of pus, but of hastily generated cell material; its natural course sluggish, and but little influenced by local treatment; healing at last, *over* the induration, while the induration continues dense and characteristic, not unfrequently throughout the entire course of the constitutional disease.

Some of the points of interest in regard to the incubation and induration of syphilis, which I have briefly set forth, will be apparent in the cases which are now before you. From the first, James B., aged 23, we glean the history of an exposure about the 13th of August last, followed by a soreness of the “bridle” or frenum, which lasted for two or three days, from which time nothing especial was observed until the second week in September, when he noticed a “bunch” in the loose tissue of the frenum which became chafed about a week ago, and made a sore, and which grew gradually larger up to the present time. It is now, as you can see, about the size of a threepenny piece, shallow and smooth, presenting a fine granular surface with but little moisture. As you pinch it up between your thumb and finger, the induration of which I have spoken may be distinctly felt; and I present this case to illustrate the history of its origin, and which is classical for a single variety, and that you may test the induration, which is well marked,

In Case II., George W., a baker, aged 19, presents

three points of apparent ulceration, one upon the side of the frenum about the size of a split pea, and two a little larger, in the furrow behind the glans penis. George has no distinct remembrance of the time after exposure when these sores first appeared, but thinks about a week or ten days; has had them about a fortnight; has been to a physician, "who burned them with caustic" several times.

The true syphilitic lesion is usually, though not always, *solitary*, as in the case first presented. Here the existence of three points of lesion, and appearing within *two* days from exposure, militates against the idea of their syphilitic nature. You will also remember that the characteristic syphilitic lesion at the point of entrance of the virus is seldom less than 15 or more days. There is, however, a distinct induration about the base of these sores, little if any less than that which you recognize in Case I. But when I tell you that simple sores and even incised wounds become indurated by irritant applications, and you recall the patient's statement that these have been "burned out with caustic," you will realize the difficulty of making a clear diagnosis at present. We will advise a simple water dressing, and if the induration is due to the application of the caustic it will soon disappear.

Case III. We have here in a patient, 36 years of age, a mass of induration of the size of a hickory-nut, developed in the tissue of the inferior portion of an elongated prepuce. Phymosis, or closure of the preputial orifice, has resulted, and is almost complete. He complains, from this cause, of much difficulty in passing his water. On pressure, a gray, serous-looking fluid exudes from the preputial orifice; a shallow excoriation of its inner surface is observed when the prepuce is strained back. The glands of the groin are distinctly enlarged, but painless; a distinct papular eruption covers his chest, arms and back. The history of this patient develops an exposure two months ago—not for a month previous, and not since. Three weeks after connection he noticed a "hardness," about the size of a pea, inside the prepuce, which has been growing ever since. He has had no

trouble from it except the pain in passing water. This case appears to me a clear one of syphilis. If the induration and its history were not sufficient, we have positive proof in the additional evidence furnished by the glandular swellings and the coppery papular eruption—the significance of which I shall have occasion to refer to on a future occasion. An operation is here called for, to remove the indurated mass on account of the phymosis which it has occasioned. I shall, therefore, proceed to remove the entire prepuce by the introduction of a director upon the superior surface of the glans, and back as far as the fossæ; then passing along it a curved bistoury, I bring it out over the fossæ glandis, and, dividing the intervening tissue, remove the redundant mass, including the induration, with a single cut on either side, completing the incisions at the frenum.

You will observe that the hemorrhage here is very slight, no vessels of much size having been severed. Usually there is quite free bleeding from the vessels of the frenum, in such case requiring ligature. The operation will be completed by bringing the cut surfaces into apposition with a very fine silk thread, by the glover's suture, which I invariably use in bringing the cut edges together after a circumcision.

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LESSON II.

Non-Auto-inoculability of Chancre—Exceptional Cases—Prevention of Constitutional Infection through Excision of the Chancre Denied—Rapiditv of Infection through Germinal Material in Proportion to the Rapiditv of the Cell Proliferation and Size of Corpuscles Diminishing in same Ratio—Syphilis Characterized by Comparatively Slow Proliferation—Infective Cells in Syphilis not necessarily Differing greatly in Size from Normal Germinal Cells—Differing only in Amount, Peculiar Aggregation, and Characteristic Infective Property—Gross Appearances of the Excised Chancre—Microscopical Examination—Beisiadecki's Observations in Twenty Specimens—Confirmation of the Claim that the Initial Lesion is Formed by Cell Proliferation, *in loco*, and not the Result of Inflammatory Action—The Open Lesion a Legitimate Result of Interference with the Vessels of Nutrition from Mechanical Pressure caused by the Cell Accumulation—Clinical Cases Illustrative of Characteristics of Chancroid.

In briefly characterizing the initial lesion of syphilis, in the previous lesson, I spoke of it as *non-inoculable upon the person bearing it*. This may be laid down as a rule where the *Chancre* (as this lesion is usually termed) has not been subjected to irritation sufficient to set up a purulent discharge. When pus is present, however, inoculation may result in an ulcerative lesion. In Case III., previously cited (p. 25), the lesion was apparently free from this complication, so that its removal will not be liable to inoculate the cut surfaces.

The effect of removal of indurated chancre by excision has been the subject of controversy, some authorities claiming that early excision of the initial induration may wholly prevent systemic infection. Auspitz and Kölliker, of Vienna, the former in 1877 and the latter in 1878, reported cases, in all numbering about 40, where such excision was believed to be effectual in preventing the occurrence of constitutional syphilis. It was even stated that in several of these cases enlargement of the inguinal glands was already well marked at the date of the operation. It is difficult to understand how such a claim can be seriously advanced when there is such

positive proof that the disease has already involved the lymphatic system beyond the site of the initial lesion; and when we consider the fact that the inguinal glands are involved, as a rule to which there are few exceptions, by the time the induration of the initial lesion is distinctly recognizable, we must deny, absolutely, even the possibility of the cure of syphilis through excision of the initial lesion alone. It is now beyond question that the infective principle of syphilis entering at a given point gradually invades the system—and as far as we are able to trace it by gross appearances and microscopic examination it is confined to the lymphatic vessels and glands until it enters the blood through the great lymph channels. Its presence, as has been previously stated, is signalized by local cell accumulations, producing the characteristic enlargement and induration, first at the point of inoculation, then of the adjacent lymphatic glands, and subsequently of every recognized lesion of the active stage of the disease. Inoculation of all or any of the juices or secretions of these lesions upon healthy persons will surely communicate syphilis to such persons. Such secretions, under the microscope, are found laden with cell material: germinal matter analogous to that which has been demonstrated by Beale, Chauveau, Burdon-Sanderson and others to contain the infective principle of variola, relapsing fever, the cattle-plague,* etc., previously referred to. The rapidity with which the infective germinal material is proliferated, would appear by the statements of the authorities just mentioned, to be in proportion to the malignity of the disease, and the size of the infective cells or corpuscles to diminish in the same proportion. It is not then remarkable that in a disease like syphilis, when its development is so gradual that months elapse before its climax is reached, the cell element should vary but little from the normal conditions. This would appear to be not improbable, for the closest microscopic investigations have failed to dis-

* Disease Germs, their Nature and Origin. Lionel Beale. London, 1872. Page 143, etc.

tinguish the diseased from the healthy cell material, and it is only by its abnormal amount and peculiar aggregation, together with its infective property, that it can be differentiated from the most healthy germinal matter. I will now call your attention to the gross physical characteristics of the initial lesion (Case III.) just removed by excision.

It has exactly the appearance and feel of a mass of cartilage, and the sensation transmitted through the fingers as the knife is drawn through it is the same as if cartilaginous material were divided. There is no appearance of vascularity. The preputial tissue in which it is imbedded, and in which it is freely movable, is apparently free from disease. The microscopical examinations of such indurations show that they are made up of cell accumulations which involve even the walls of the blood-vessels, and bear out very strongly the claim that they are not the product of an inflammatory process, but of a local cell proliferation at this point. Alfred von Beisiadecki, of Krakow, has given us the results of a very exhaustive microscopical examination of twenty specimens of this variety of indurated tissue.* He says: "The *induration* consists in a cell infiltration of the papillæ of the corium and subcutaneous connective tissue. The infiltrated cells are similar to those of dermatitis. They are round, have one or two nuclei, have a finely granular protoplasm, and separate the connective tissue equally. These fibres retain the normal size, are not infiltrated as in dermatitis; they are apparently denser and more resistant to chemical reagents. But the arrangement of the cells differs from that in dermatitis. In those places where a rich cell proliferation has taken place, and in their vicinity still more, we find that the neighboring tissues of the vessels, *as well as of their walls*, are abundantly infiltrated with cells. The walls of the capillary vessels of the papillæ are thickened, have a shining and rigid appearance, and *enclose numerous nuclei, which project even into the lumen of the vessels*. The adventitia of

* Archives of the Academy of Sciences of Vienna, 1867.

the arteries and veins is three times its normal thickness, *in consequence of the* presence of numerous round, spindle-shaped and branched cells. The calibre of the cells is diminished, but the vessels are permeable. If the induration still increases, we find in its vicinity an abundant proliferation in the adventitia of the vessels, and subsequently the adjoining connective-tissue cells enlarge and proliferate and anastomose with those situated in the adventitia by means of their processes."

"The induration is explained, however," he further remarks, "neither by the number of cells nor by their peculiar properties, but by the fact that while in *dermatitis* we have a proliferation of cells, and also a serous exudation which infiltrates the tissues and fibres, in the induration of syphilis we have a dry anæmic tissue, resistant connective-tissue fibres, considerably thickened walls of vessels. The dryness of the induration, which produces the hardness and also the anæmia, is caused by the *proliferation in the walls of the vessels*, which makes it difficult for the serum to leave the vessels, and also diminishes their calibre. . And this," he says, "explains why the syphilitic induration breaks down into a molecular mass, and why resorption takes place so slowly."

Now, in contrast with the indurated tissue associated with and characteristic of the initial lesion of syphilis, I wish to direct your attention to another patient, Case IV., who presents a sharply defined ulcer occupying the central portion of the fossæ glandis, encroaching upon the glans and also upon the reflexion of the prepuce. It is fully as large as a dime, and, as you see, something like a figure 8 in form. The history given by the patient is that a little over a month ago he had a suspicious connection, and within a few days—he is not quite certain, but not more than five—he observed "two small festers" (pustules), which soon discharged and grew until they formed a single sore. He has made repeated applications of "blue-stone" (cupri sulph.), and thought he was getting better, when, a few days since, his right groin began to be swollen and painful, and he has come to us for relief.

On pressing this ulcer between the thumb and finger it is found to be quite free from hardness, although the caustic treatment to which it has been subjected would be likely to develop more or less induration. The edges are abrupt, the floor is irregular and covered with a yellowish *débris* composed of pus and disorganizing tissue; the surrounding border is red and somewhat swollen, and also quite tender, as you can observe by the shrinking from our very careful manipulation. We have here, then, judging from the history and appearance and condition, a characteristic example of the contagious venereal ulcer, previously referred to as second among the contagious venereal disorders, and called chancroid. If there was still a doubt as to its nature, it is dispelled by the inflamed and swollen condition of the right groin. We recognize by gentle palpation a small abscess of one of the inguinal glands, a not uncommon result of the chancroidal action. Pus from the chancroid, gaining access by ulceration to the interior of a lymphatic vessel, passes at once into the gland in connection with it, and through its contagious and destructive property goes rapidly on to the production of a virulent abscess, the pus of which is contagious and destructive equally with that of the chancroid. The chief characteristic of the chancroid, you will observe, is its destructiveness. It begins as a pustule, resulting from necrosis of tissue, set up by contact of a molecule of chancroidal pus. Throughout its existence its secretion furnishes pus which, brought into contact with healthy tissue, sets up a destructive action of greater or less activity. It is simply, only and always destructive, and without the destructive property it cannot be chancroid. It is the antithesis of the initial lesion of syphilis, which in its inception is a process of growth instead of dissolution, and in which loss of tissue occurs not by any virulent agent, but by such an accumulation of new material as to embarrass and finally to arrest the processes of nutrition, and in this way result, in instances like that of Case III., in an open lesion. The microscopic examinations of Beisiadecki, which have been amply verified by Auspitz, Verson, etc., prove this almost beyond question.

LESSON III.

The Cell Accumulation of the Initial Lesion of Syphilis in Harmony with what is proved to occur in every Lesion during the Acute Stages of the Disease—Cell Proliferation, *in loco*, always Sufficient to Explain Satisfactorily the Cause and Condition of the Lesion—Gradual Progress of the Infected Cells through the Lymphatic System until the General Blood Current is Reached—Practical Denial of the Views of Instant Infection, with Corroborative Proofs—Incubation of Syphilis—Different Modes of Transference of Syphilis—Most frequent Locations of the Initial Lesion—Communication by Direct Contact through the Act of Kissing, through Surgical and Gynecological Operations, etc.—Communication of Syphilis through Mediate Contagion or through any Material which has been in Contact with the Secretion of any Lesion of Active Syphilis—Directions for the Prevention of such Accidents—Eight Cases Illustrative of this Mode of Acquiring Syphilis by Medical Men.

The significance of the induration in the initial lesion of syphilis as thus explained is most important, and will be found to be in harmony with and typical of each and every manifestation or lesion throughout the active or acute stages of the disease. The cell accumulation which has been demonstrated to constitute this induration has been found to occur in the lymphatic vessels in communication with it, not infrequently recognized, like knotted cords under the integument, running to the lymphatic glands into which they empty, which in turn become depots for the proliferative process, and enlarge in the manner shown in Case III. (see page 25), and are claimed and proven to be characteristic of the presence and advance of the syphilitic disease. The induration associated with the initial lesion of syphilis, then, is the result of a gradual invasion of the tissues, commencing at the point of inoculation or contact of the syphilitic principle, or so-called virus, with an open lesion of the integument, or mucous membrane. It is a most significant and important fact that, since the microscope has been applied to the investigation of syphilitic disease, no lesion or manifestation of it has failed to present evidences of cell proliferation, *in loco*, suf-

ficient in amount to explain, in a satisfactory way, the cause of the lesion. It has also in the same manner been demonstrated that this localized cell proliferation and accumulation occurs in a methodical way, progressing steadily from its point of beginning, or first contact with the syphilitic virus or principle, gradually invading the lymphatic vessels and glands, until it reaches the great lymph reservoir, the *receptaculum chyli*, through which it reaches the general blood-current by the sub-clavian veins.* All this, it will at once be seen, is in direct opposition to the views formerly, and to a great extent still, held, viz., that the virus of syphilis enters the blood at the instant of inoculation, and that thus "the entire organism is affected at once."† Such a claim is purely theoretical and unsupported by a single scientific proof, while the evidences of a gradual infection, through the lymphatic system, are not alone met in microscopical examinations by distinguished scientists, but are confirmed by the clinical observations of every careful observer; each succeeding lesion or manifestation from the initiation to the termination of the disease adding corroborative proofs, not only by its physical characteristics, but by the date of its appearance.

THE SO-CALLED INCUBATION OF SYPHILIS.

This is a term usually applied to the period which elapses from the date of inoculation to the appearance of the characteristic initial lesion, and may vary in different cases, according to different authorities, from one to seventy days, the usual time being from ten to twenty-five days. Strictly speaking, syphilis has no period of true incubation, inasmuch as the process of cell proliferation is undoubtedly established at the moment the virus (disease cell or germ) comes in contact with the germinal or white blood cell of the human organism.

* See Otis on the Physiology and Pathology of Syphilis. G. P. Putnam's Sons. New York, 1881.

† Billroth, Surgical Pathology. Am. ed., p. 386.

The immediate effect of such contact seems to be a rapid increase in the process of proliferation of such cells as the normal white blood cells as have become contaminated or degraded by the influence of the disease germs (virus) of syphilis. Through accumulation of this degraded product, the tissue (including the vessels of nutrition) at the point of initiation of this process, becomes densely packed, forming a neoplasm of greater or less extent. The process of degradation or infection is confined to the immediate locality of the inoculation, until the degraded cells have gained access to the interior of a lymphatic vessel. Through this channel the diseased cells are carried to the nearest lymphatic gland (the *gland of connection*, as it may be termed), and here are arrested, by the peculiar conformation of the gland structure, for a longer or shorter period (usually about six weeks), during which time there is no further evidence of constitutional infection.

This period of *apparent* rest is usually termed the *second* incubation of syphilis.

NOTE.—It is probable that the interval between the date of inoculation and appreciable gland enlargement is dependent upon the facility or difficulty with which the diseased cells gain access to the lymphatic vessel connecting the point of inoculation with the adjacent gland. Hence, at points where the distribution of lymphatic vessels is most liberal and most superficial we should expect to find the *shortest interval* between inoculation and gland implication. This view is supported by the clinical fact that, in cases when the shortest interval occurs, the initial lesion (in the male) is located at the frenum, or the anterior-inferior surface of the glans penis. From this point, chiefly, the superficial lymphatic vessels radiate, and are (according to Balaieff) “most *superficial*, rising, in this especial locality, until they lie just *underneath the epithelium*” (see Otis on the Physiology, Pathology, and Treatment of Syphilis (Putnam Sons, 1880), pages 12 and 13, where it is shown that, by direct introduction of the syphilitic element into the *interior* of a lymphatic vessel, diseased action, in the gland of connection, is inaugurated at once).

MODES OF TRANSFERENCE OF SYPHILIS FROM THE DISEASED TO THE HEALTHY.

The modes of transference of syphilis from the diseased to the healthy are three:

(1) By DIRECT CONTACT of the diseased surface with

an abrasion, or other breach of tissue, on a healthy person.

(2) By **MEDIATE CONTAGION.**

(3) By **HEREDITARY TRANSMISSION.**

Communication of syphilis by **DIRECT CONTACT** (as under the circumstances peculiar to the venereal act) is the most frequent mode of the acquirement of syphilis. In the female, initial lesions from this source are most common in the vicinity of the *ostium vaginae*; especially so in the folds of mucous membrane about the *fourchette*; between the greater and lesser *labia*; under the sheath of the *clitoris*; upon, and even within, the *meatus urinaris*. They are also found to occur, not unfrequently, about the *anus*; they are rarely found on the *os uteri*, and still more rarely on the *vaginal rugæ*.

In the male, the most frequent sites are upon the *glans penis* and *prepuce*, occurring with especial frequency in the *sulci* by the side of the *frenum*, at the *meatus urinaris*, and in the *fossæ glandis*, and occasionally on the integument of the *penis*.

In both sexes the initial lesion is sometimes found upon either *lip*, in the angles of the *mouth*, or even within it, and also near, or within, the *anus*; all as a result of direct contagion. Communication of syphilis by direct contact, through the act of *kissing*, is an accident of occasional occurrence. There is also a danger that it may be transferred, through the act of nursing, from syphilitic infants to healthy wet nurses, or from syphilitic nurses to healthy infants. Relations between nurses and children should never be entered into without a careful consideration of this fact. In these cases, the inoculating secretion may be furnished, either by an *Initial Lesion*, or by one of the common manifestations of active syphilis, known as the *Mucous Patch*.

Initial lesions are also found in various other localities, as solutions of continuity, *at any point*, may become the accidental recipients of the syphilitic *contagium*. Usually, they are rare in proportion to their distance from the genitalia. Surgeons, accoucheurs, and gynecologists are especially exposed to the peril of an innocent inoculation of syphilis by direct contact. Within the circle

of my city acquaintance, at the present time, are three medical gentlemen who acquired syphilis through an initial lesion on the right forefinger. In another case, a surgeon, also an acquaintance, received the syphilitic inoculation in the end of his right forefinger, through accidental puncture, by a spicula of bone, while amputating the leg of a syphilitic subject.

INOCULATION OF SYPHILIS THROUGH MEDIATE CONTAGION.—Cells diseased by the syphilitic influence (or what is usually termed the syphilitic *virus*) may cling to substances with which they are brought into contact. All degraded animal cells, or disease germs, have the power of maintaining their vitality for some time after removal from the organism in which they have been developed. (Beale.) Any material, therefore, which has been in contact with the secretions of syphilitic lesions, or the blood of a syphilitic, during the active stage of syphilis, may prove the medium of communication of syphilis to a healthy person, provided, only, that the substance so contaminated is brought into contact with a *lesion*, however slight, of the skin or mucous membrane.

The most common source of the *contagium*, in cases of MEDIATE CONTAGION, is the *Mucous Patch*, a constitutional syphilitic lesion, frequent upon the mucous membrane of the lips, mouth, and faucial region, in persons passing through the active stages of syphilis. The *saliva* is thus impregnated with the syphilitic disease germs, and, through it, a variety of domestic utensils have been the known medium of syphilitic inoculation, by contact with abrasions upon the lips of healthy persons, without regard to age or sex. In the same way, pipes passed from syphilitic mouths, cigars from syphilitic cigar-makers, canes, pencils, and even sticks of candy, contaminated by syphilitic saliva, have effected a syphilitic inoculation. Within the last eighteen months I have met with four cases where there was undoubted proof of the acquirement of syphilis through mediate contagion. One, of a young lady, with the initial lesion on the lower lip, acquired from her lover's kiss. The second, a physician, with the initial lesion

just within the angle (on the right side) of the mouth, from a syphilitic friend's pipe. The third, in the same locality, appearing, characteristically, about three weeks after a morning spent in a dentist's chair. The fourth, a worthy merchant, with his initial lesion (well marked) on his lower lip, with mucous patches in his mouth, and an accompanying syphilitic iritis. In this latter case the only clue to the mode of acquirement of syphilis was the habit of passing among numerous clerks and occasionally transferring a lead pencil from their desks to his mouth.

Well-marked constitutional syphilis, with complete absence of any genital lesion, was present in each case cited.

The foregoing typical cases, illustrative of the modes through which syphilis may be contracted by *Mediate Contagion* (with the exception of the last), were seen in consultation with physicians from neighboring States. Such accidents, however, are of more likely occurrence in great cities, where moral restraint is least stringent and opportunity for acquiring venereal diseases most favorable. It becomes necessary, therefore, in connection with cases of obscure disease, simulating syphilis, to make a searching scrutiny of all incidents, conditions, and exposures which may, in the light of possible accidents, point to opportunity of syphilitic infection through mediate contagion. The third case cited is of especial value, as conveying a lesson on the necessity of scrupulous care of instruments used in operations about the mouth.

So simple a procedure as the depression of a patient's tongue with a spatula, in examinations of the mouth and throat, may easily become the means of carrying the syphilitic disease germ to an abraded surface in a healthy person.

In all cases, therefore, where the same instruments are in use for different persons, after thorough cleansing, their passage *through the flame of an alcohol lamp* should be systematically practised after every operation. The same procedure is equally indicated in regard to instruments used upon other mucous membranes,

as those lining the urethra, the bladder, the rectum, the eye. It is also essential in all instruments used in cutting operations at any point. Not the least important among the modes of conveying syphilis by mediate contagion is that by *vaccination*. Numerous well-authenticated cases of this disaster may be found recorded in any modern systematic work on syphilis. Inoculation of syphilis by vaccination may be effected either by an impure virus or an unclean knife. Use of the bovine virus, by means of a clean instrument, relieves this beneficent operation from the stigma of being considered a possible means of communicating syphilis.

Extract from the Independent Practitioner.

EIGHT CASES OF SYPHILIS OF THE FINGER IN MEDICAL MEN. REPORTED BY FESSENDEN N. OTIS, M.D.

Case I. W. N., M.D., æt. 26, was in good general health up to three weeks ago. In the latter part of September, 1881, he noticed a small, red papule on the superior surface of the forefinger, at the middle of the second phalanx. He had been for over a month on the venereal service of Charity Hospital. He had never noticed any previous abrasion at the point of appearance of the papule. He is not aware of having had any special exposure of this finger. He had been in the habit twice a week of making vaginal examinations of venereal patients. The papule was painless, had a pale red color and a slight boggy feel, but was without distinct induration. Thinking it might contain a splinter, an incision was made into it, but no splinter was found; no pus, only blood, escaped. This cut remained open and assumed the form of a small ulcer with sharply cut edges, $\frac{5}{16}$ of an inch in diameter and $\frac{1}{8}$ of an inch in depth, circular, with smooth, shiny, red floor. This exuded a secretion which accumulated, dried, and formed a scab which dropped off at the end of twenty-four hours, with an escape of 3 or 4 drops of sero-purulent fluid. It would exude, dry, and scab over again. I examined it about the 10th of November, when exudation first commenced, and detected in connection with it an enlarged and somewhat tender gland in the axilla. Several days after I found an enlarged epitrochlear gland in the right arm. A deep red areola with a scaly border now surrounded the lesion. Patient's health was good up to three weeks ago (or six weeks after the discovery of the papule), when without apparent cause he began to suffer with headache and general malaise. Insomnia well marked; appetite pretty fair. He, however, kept about his work at the hospital; he had some febrile excitement; temperature about 100 in the evening. These symptoms all disappeared in about ten days, and he returned to his general health, and was feeling perfectly well, when on December 18, looking, as had for some time been his habit on retiring, he discovered on his body a distinct eruption which he described as papular in character.

Examination at the present time (about eleven weeks from the discov-

ery of the original lesion) shows a discrete eruption of papules both fine and coarse, scattered over the body, most prominent on the chest and arms, and pale red in color; also distinctly indurated glands in cervical, epitrochlear, and inguinal regions, characteristically enlarged, and one also in right axilla enlarged and tender. The throat is congested, a single scab is found in the hair. The patient, who had been desirous of waiting until the diagnosis of syphilis was absolutely certain, was now put upon a systematic treatment for that disease.

Case II. 1878, S. S. B.; presented with a papule of the middle finger of right hand, about the size of a silver three-cent piece, just over the second joint, elevated and non-suppurating. It appeared as a red spot about two weeks previous, and has gradually become elevated, and with no distinct induration. About six days ago a dry scale appeared in the centre and a molecular necrosis started from that joint. He has poulticed it for the last week. There is no local tenderness but some pain in the arm stretching up from the lesion as far as the elbow. A single enlarged gland is found in the corresponding axilla about the size of a filbert.

The patient was advised that the lesion was probably syphilitic, and instructed to wait for signs at other points. In this case there was no positive induration about the lesion, only a boggy feel. The patient has no idea of any date of exposure. He attended a confinement on April 6, but had no suspicion of syphilis in the case.

I lost sight of this patient until July, 1881, when I was informed by Dr. E. F. Ward, of New York, that he subsequently had roseola and a papular eruption developed, and that he was at this time suffering from hemiplegia, which had come on suddenly.

Case III. In latter part of December, 1871, the patient, a physician, noticed a red spot upon the dorsal surface of the right index finger, near the base of the second phalanx. The spot when noticed was about an inch in diameter, and continued slowly to increase in circumference and to become raised, until within three weeks it reached nearly the size of a three-cent piece and looked precisely like a vaccine vesicle without a central depression. It soon became incrustated, but by the application of poultices the crust was removed, leaving a well-rounded ulcer about one-third of an inch in diameter, excavated, clean, without discharge, the edges raised and all of a deep red color and sluggish in appearance, neither inclining to heal itself nor to yield to treatment. The base was boggy and no induration whatever could be discovered, although searched for by a distinguished surgeon in this city, and by him the lesion was confidently pronounced to be at most a *simple* chancre. Another surgeon familiar with syphilis was equally confident of its simple character. A third who saw it while a small papule regarded it with suspicion, and advised the patient to consult some surgeon who gave especial attention to such cases. The patient then came to me. My opinion was strongly in favor of a syphilitic origin for the lesion, but the patient desired to wait for further proof before commencing constitutional treatment. The ulcer showed no sign of improvement. The extended finger was bandaged to a splint, rendering the point immovable, and allowed to remain so two weeks, but without improvement. I then advised the application of iodoform powder. Within forty-eight hours a decidedly favorable change had taken place, and within ten days the ulcer was perfectly healed. Once or twice afterward the skin was accidentally broken, but

on reapplying the iodoform it healed kindly. From the first appearance of the spot till the healing of the ulcer no pain or discomfort was felt. After some four months—that is to say, in the following April—the doctor called to inquire about an eruption which had made its appearance a week or two previously upon his breast and arm chiefly, sparsely on his face and head, which was quite bald. The eruption was of a dull red color, slightly elevated, and several papules were encircled by a line of exfoliating epidermis. They were free from itching, and were discovered by the accident of their appearance on the face and scalp, as they caused no sensation and were not preceded by any fever, headache, or other constitutional disturbance. Examination showed distinct gland enlargements in the cervical, inguinal, and epitrochlear regions. He was then for the first time put on a regular mercurial course, viz., one pill of mass. Hydrarg., 2 gr. combined with 1 gr. of the exsiccated sulphate of iron, three times a day. At about this time this patient's wife began to complain of a profuse vaginal discharge, having been previously in good health, and free from any leucorrhœal trouble. About three months subsequent to this, a characteristic papular eruption appeared on her face and body, general gland enlargements distinct and prominent in the groin, neck, and epitrochlear regions. She too was then put on a systematic mercurial course similar to that of her husband. Both were kept under treatment for about a year and a half, when no signs of syphilitic trouble having appeared for several months, it was discontinued. To-day, Feb. 21, 1882, the doctor reporting by my request, states that now nearly ten years from the disappearance of the disease, and the cessation of all treatment, both he and his wife have been and are now free from any evidence of syphilis.

Two other cases of the occurrence of syphilis in physicians where the initial lesion was situated on the right forefinger have been reported to me during the present winter, and in addition to these I am cognizant of three other cases in New York City, two gynecologists and one distinguished surgeon, who have had syphilis through an initial lesion of the finger.

The first point of interest in considering the foregoing cases is the danger to which any physician who treats diseases of females or attends females during the parturient condition is more or less exposed, and the necessity of using extraordinary precautions in examining or attending every case to which a suspicion of syphilis could possibly attach, and habitually to protect by previous application of elastic collodion any cracks or abrasions about the nails or joints of the fingers, especially of the right forefinger, and to use a lotion of carbolic acid (1 to 100) or of the liquor potassa permanganatis, 1 part to 40 of water, as a habit after all digital examinations of the female genital apparatus.

It may be safely asserted that a pre-existent abrasion or fracture of the skin or mucous membrane is absolutely essential to the acquirement of syphilis; and that in any case when syphilis has been acquired without the recognition of a local initial lesion, it has been present, but overlooked. Destruction of tissue is not essential to the perfect initial lesion of syphilis.

Healing of an abrasion may take place after an inoculation, just as promptly and as perfectly as if no inoculation had taken place, and the point of induration following may be so small and insensitive that it would easily escape observation.

In case of the wife of physician (Case III.), the initial lesion was not discovered. Her eruption was only preceded by a profuse vaginal discharge. There was never any recognized open lesion on the penis of her husband. It might be said of her that the inoculation had taken place through the influence of the semen. Mireir, of Marseilles, has made repeated experiments of inoculating the semen of a person in the active stage of syphilis, upon healthy persons, but without effect. It is more probable—in fact, almost a certainty—that the disease in this case was acquired from a syphilitic papule, of which there were at one time several on the penis. Abrasion occurring during coition coming in contact with an abrasion of the os or vaginal mucous membrane, might there establish the initial lesion, resulting in the vaginal discharge, which preceded the syphilitic eruption, which was the first recognized evidence of syphilis in the doctor's wife.

The second point of interest is in the uniform and characteristic physical appearances, presented in the initial lesion of syphilis of the finger, coming on always as a papule, coming soon to be of a deep red color, and presenting a superficial abrasion, becoming circular and deeper by a slow molecular necrosis; not by ulceration with formation of pus. The secretion thin and serous, and drying into a scab which is soon displaced by the fluid accumulating underneath.

The entire absence of induration; in its place a slight, flat, juicy-looking, boggy swelling or elevation about like a small peppermint in size and thickness—early appearance of an enlarged and somewhat tender gland in the axilla of the corresponding side.

I would like to call attention to an interesting fact in regard to the efficacy of remedial measures, viz., that in five of the above-mentioned cases a careful systematic mercurial treatment was pursued during a period varying from one and a half to two and a half years. Eight healthy children have been born, and both they and the parents have continued free from any evidence of syphilis up to this date.

LESSON IV.

Syphilis by Hereditary Transmission—Differences of Opinion in Regard to the Transmission of Syphilis through the Spermatazoids—Evidence Furnished by the Cell Theory of Syphilis showing the Improbability of Infection in this Manner—The Onus of Hereditary Transmission Thrown Upon the Mother—The Previous Acquirement of Syphilis by the Mother Necessary to the Infection of the Fœtus or an Embryo—Syphilis Transmitted only during the Active Period of the Disease; from One to Three Years—Reasons for this Statement—Cases Reported Claiming a Longer Period not well Substantiated—Without a Contagium there is no Syphilis—Errors Due to Acceptance of Imperfect Evidence—Illustrative Case.

SYPHILIS BY HEREDITARY TRANSMISSION.

Heretofore, in considering the modes of transmission of syphilis, we have accepted the probable fact that this disease is communicated by contact of a diseased with a healthy human germinal cell. We have now to consider how diseased cells in the adult, male or female, suffering with syphilis, may be brought in contact with those of the embryo, or of the foetal organism. It is claimed that the fœtus, through the natural processes of growth and development, may be built up from a syphilitic seminal animalculæ (*spermatozoids*) furnished by the male, in conjunction with an ovum furnished by a healthy, or even by a syphilitic, female, and may thus come to comparative maturity. Much clinical material has been adduced to prove this. On the other hand it is claimed, with equal proof of a similar character, that this is *never* the case, but that the syphilitic influence is *always* furnished by the *female*; presumably communicated to the embryo or fœtus through contact with the nutritive elements furnished by a mother in whose organism the degraded cells or disease germs of syphilis are present.

Like most important questions in which syphilis is involved, a solution of the foregoing, based on clinical evidence alone, is most difficult. The best proof of this

statement is, that, on either side of all such questions, the most experienced and competent observers are ranged in nearly equal force. To constitute *Hereditary* syphilis either the embryo or the fœtus must be infected. All infection during or subsequent to birth must be classed with one or other of the modes of transmission of syphilis previously considered.

If we accept the syphilitic influence to be, as previously claimed, a degraded formative cell, we may also accept, as a legitimate sequence, that, through this degradation, there is a loss of formative power—an inability to develop into any useful tissue.

The contagion of syphilis, as claimed, is always effected by contact of a *degraded* with a *healthy* germinal cell. In a strict sense, therefore, it is always localized. Cells thus degraded are practically emasculated, their capacity for usefulness is lost. Of necessity, then, growth of living tissue occurring, it must take place through the normal cell elements, that is, through those which have escaped this degradation. It is thus plain that only a portion of the germinal material of a living organism can be affected by syphilis. Sufficient germinal material to carry on the processes of life and growth must escape, or growth would be at once arrested and life would cease. The possibility of involving in the syphilitic dyscrasia so infinitesimal a fraction of a spermatogenic organism as would still enable it, in conjunction with the ovum, to play an efficient part in the growth and development of the human embryo, is scarcely conceivable. Especially difficult shall we find it to accept such a view when we consider that, once in connection with the ovum the syphilitic influence would be rapidly imparted to the germinal elements furnished by *it*. We may, then, consistently, throw the great improbability of continued growth (or indeed of any growth), under such an unfavorable influence, into the scale with the clinical claims of those who *deny the possibility* of the embryo or fœtus being infected with syphilis by the *spermatozooids*. With this view of the subject, the onus of hereditary transmission of syphilis is necessarily thrown upon the MOTHER, under all, even under appar-

ently contradictory clinical circumstances. Hence, when an embryo or fœtus is the subject of syphilitic infection, we may conclude that it is the result of *contact* of its normal formative or germinal cells, with cells degraded through the syphilitic influence, furnished by the nutritive fluids of *the mother*; either directly through the circulation, or through degraded cells from her organism, gaining access to that of the embryo or fœtus by their amœboid power.

Hence, to make the syphilitic infection of an embryo or a fœtus possible, the organism of the mother must *first* be infected with syphilis. The previous acquirement of syphilis *by the mother* from the father, or through the secretion of a syphilitic lesion, or from the blood of one suffering from active syphilis (by direct or mediate contagion), is necessary to the syphilitic infection of a fœtus or an embryo.

It is only during the active stages of syphilis (primary and secondary periods) that the contagious element of the different lesions of syphilis and of the blood is present. Therefore hereditary transmission of this disease is only possible during this time (*usually* from one to three years). The sequelæ of syphilis (tertiary and quaternary periods) contain no *discovered* elements of contagion. The most careful microscopical examinations have failed to demonstrate in the products of *Tertiary Syphilis* (various forms of *gummata*, including eruptions) anything besides the débris of normal germinal elements. Repeated inoculations of these products have failed to disclose any contagious principle. *Without contagium there is no syphilis*. Hence we may reasonably conclude that hereditary syphilis is only acquired during the active periods of the disease, and that in order to effect syphilitic contamination of the embryo or fœtus the female organism must first be infected.

With this view of the maternal influence in syphilitic infection of the fœtus or embryo, cases reported, claiming such infection to have occurred through the sole agency of the father suffering with syphilis (the mother, up to this time, free from the disease), must be classed either among those instances where the characteristic

features of the disease are absent, or where they are so imperfectly developed as to have escaped detection.

The difficulty of instituting a thorough examination, under circumstances where it is necessary to avoid suspicion of its object, the want of tact, care, and experience in detecting obscure evidences of this disease, have, without doubt, too often led to the acceptance of syphilis acquired through the paternal influence, where, under other conditions and in other hands, infection of the mother would have been recognized.

The following case will serve to indicate some of the various ways in which syphilis may be overlooked, and further, to show important variations in time and manner of development of syphilis from a similar source. Some three months since, Dr. W., a naval surgeon, consulted me in regard to a small nodule on the *frenum preputialis*. An abrasion was discovered, after a suspicious exposure, some four weeks previous. This healed at once, as if simple, and nothing further was noticed, until the nodule, about the size of a kernel of pearl-barley, was observed. Its surface was abraded, probably during a recent connection. Its scanty secretion was found under the microscope to consist chiefly of laminated epithelial scales. On account of the obesity of the patient, a satisfactory examination of the inguinal glands was impracticable. No enlargement could be felt. I advised excision of the neoplasm. This was done at once, and healing by first intention was complete in forty-eight hours.

A few days ago (December 15th) the doctor called to say that the operation had evidently been efficacious in saving him from a general syphilitic infection; that he had positive proof of having, himself, communicated syphilis to a young lady the night previous to the excision. In her case an initial lesion followed, in due time after the connection, accompanied by inguinal gland enlargement and succeeded by general gland hyperplasia. She now had, in addition, a characteristic papular syphilide, and yet he claimed to be absolutely free from the least evidence of syphilis.

A cursory examination appeared to confirm the doc-

tor's statement. This, however, appeared so improbable, that I at once instituted a more thorough examination, which resulted in the discovery, under a deep layer of adipose, of small but characteristic gland enlargements in connection with the initial lesion. The cicatrix on its former site was slightly indurated. Glands at a distance—epitrochlean and post-cervical regions—perceptibly enlarged. Slight but positive congestion of the fauces, and a narrow but characteristic *mucous patch* hidden behind the anterior pillar on either side. These proofs of syphilitic infection had escaped the anxious search and skill of the patient, also of a professional associate, who was a competent and experienced general surgeon.

Through evidence furnished by clinical cases, it has been claimed that syphilis once acquired is never fully eliminated from the system, but that it exists as a possible infecting agent, after the stages which furnish *known* contagious elements are past. During more than twenty years of observation and especial interest in regard to this point I had been unable to find a single undoubted example, where a person in the known *Tertiary* period of syphilis (and so demonstrated by the absence of the glandular enlargements characteristic of the active stages of the disease) had been the proven carrier of syphilis to a healthy person. I came to believe fully, in regard to persons who had passed successfully through the so-called *primary* and *secondary* periods, and so proven by complete absence of *primary* and *secondary hyperplasias* that treatment was no longer necessary, that such persons might, if desirable, even be permitted to marry, with the assurance that, through them, transmission of syphilis to wife or child was impossible. This doctrine I had taught and practised for a very long period, when a case came under my observation which, but for a mere chance, had unsettled me on this vital point forever. The important lesson which it enforced, namely, *to distrust the value of purely clinical evidence*, may be profitably transmitted by the brief extract from my note-book which follows:

Mr. Q., a young lawyer, twenty-five years of age, had

acquired a well-marked initial lesion of syphilis on the *glans penis*. His gland enlargements in the epitrochlean, cervical, and post-cervical regions were characteristic—his roseola escaped observation, but a classical papular syphilide appeared about the fourth month, and continued for several weeks. Ulcerations of the tonsils and *mucous patches* on the soft palate and inner surface of the cheeks followed, but yielded satisfactorily to treatment.

The gentle but persistent use of mercury internally and by inunction had been pursued from the first and through a period of twelve months, occasionally combined with the iodide of potassium. At this time all glandular enlargements had disappeared, except a small one, the size of a pea, in the right *post-cervical* region. Treatment suspended for three months, when a thin diphtheric patch appeared on the right side of the tongue, with slight induration.* Treatment resumed, mercury, with iodide of potash. Patch on the tongue faded slowly out in about a month, but was replaced by another, on the opposite side, which continued about the same time, *cervical gland* not perceptibly changed. A series of mercurial baths, and a course of Zittman's decoction, covering nearly three months longer: gland now scarcely felt. Patient very anxious to marry, but was advised to wait a full year. The next six months passed without any new development. *Gland* very small, but still recognizable, when the patient, now in good general health, married on his own responsibility.

One year after marriage the wife gave birth to a fine, healthy-looking boy. During the fifth month of lactation, the wife had scrofulous abscess of the neck (inherited tendency), which alarmed the husband (fearing syphilis) exceedingly. She recovered under simple treatment, and relief from nursing. Child healthy up

* I have known patches similar in appearance to result, in certain cases, from the use of the iodide of potassium, to pass off when the remedy was discontinued, and again to return when it was resumed. I have also seen patches of the same appearance in the mouths of persons habituated to the use of tobacco, where no history of syphilis could be ascertained.

to third year, when it died from tubercular meningitis, following scarlet fever. No salient evidences of syphilitic taint. Fear that his old trouble had been in some way connected with his child's death made the husband very unhappy, and he frequently expressed the fear that he had contaminated or might yet contaminate his wife, to whom he was tenderly attached.

In November, 1870, Mr. Q. complained of some swelling and soreness over the right tibia. A gummy tumor was found presenting, the size of half a horse chestnut. The nature of it explained, he was put on a mild mercurial, with large doses of the iodide of potassium, which resulted in its entire disappearance within a month. Both husband and wife continued healthy up to October, 1871, when one morning he called, in great distress, to say that his wife had some sores in her mouth, resembling those of his early syphilitic trouble. I did not hesitate to assure him that this was simply impossible; that his disease, if any trace of it remained, was beyond the fear of contagion. The spotless character and chaste deportment of his wife made me sure there could be no other danger, and I comforted him accordingly.

What was my surprise, on seeing her, to find not only several characteristic mucous patches in her mouth, but, on further examination, to discover four or five mucous tubercles—one on the inner border of the thighs, and the others on the right labium. I was forced to acknowledge to the unhappy husband that he was right, and we could only conclude, contrary to all my assurance and belief, that his old taint had been the cause.

Here was a dilemma. I could not suspect the wife. I could not accept the contagion from a source which stultified all my conclusions, teaching, and experience. I was wretched. The husband was wretched, but resigned, desiring only, if the knowledge of it was not necessary to her recovery, that I should keep the secret from his wife. *She was serene.* After a few weeks' medication, and not unfrequent painful applications of caustic to the mucous tubercles, I thought she was *too*

serene. I asked and received permission from the husband to tell his wife what her trouble was, if I thought it best. My manner to her was changed; from being sympathetic and considerate, it became brusque and reserved. An explanation was finally demanded. I evaded the issue. After a little dexterous fencing, the source of her troubles was flatly claimed. Ignorance of my meaning was feigned.

I explained the only possible causes of her disease, and said she had been married too long to suspect her husband. She promptly replied that he was "as pure as the sun." I then told her if she would give me her confidence, I would protect her—if not, would lay the matter before her husband (who was not supposed to be aware of the nature of the disease). Then came tears—reproaches—and finally, in a tempest of womanly indignation, she bade me leave, *forever*. I left, disheartened and in disgrace; but, before I was well on my way downstairs, I was recalled, and amid tears and sobs she confessed. A yachting excursion; an unexpected night at sea; exposure with an old lover: and all this about three months before. A letter was subsequently received from him full of regret that he had discovered himself syphilitic, and inquiring if he had been so unfortunate as to have communicated the disease to her.

The subsequent progress of this instructive case was not peculiar. The lady made an apparently complete recovery in about a year. After another year she again became pregnant—was delivered of a healthy child, now living—but died of puerperal fever the third week after her confinement.

In carefully reviewing this history it will be observed that while it is seen to be no exception to the rule that *tertiary lesions* are not contagious, it will show how easily they may achieve the credit due to the *active* manifestations of syphilis.

LESSON V.

Early Differential Diagnosis—The Earliest Recognizable Evidence of Syphilis in Local Cell Accumulation, and Progressing until Characteristic Nutritive Disturbances Occur—Neither Inflammation nor Ulceration Essential Features in the Results of Syphilitic Inoculation—Lesions of whatever Kind may Receive a Syphilitic Inoculation and Heal as Quickly and Perfectly as if no such Inoculation had Occurred—Immediate Decision in such Cases impossible—Delay until the longest Interval of Known Latency between Exposure and Development of Syphilis has Occurred necessary to a Positive Opinion in Cases of Doubt—Induration of the Initial Lesion Non-inflammatory—Inflammatory Induration Yields to Local Treatment which renders Specific Induration more Permanent—Physical Characteristics of Specific Induration—Value of “Confrontation” in Cases of Doubt—Cases Illustrative of Danger of Mistaken Diagnosis.

EARLY DIFFERENTIAL DIAGNOSIS.

The characteristic, and only constant, feature of all lesions, during the active stages of syphilis, is shown by microscopic examination to consist in a localized cell accumulation.

Consideration of the nature and behavior of this material will afford intelligent aid, in a differential diagnosis, between the initial lesion of syphilis, in its early period, and solutions of continuity from other causes. As far as shown, syphilis is primarily a process of cell growth and accumulation, so rapid that it interferes with healthy *tissue* growth, by obstructing the processes of nutrition and development. Not of necessity interfering to the extent of causing death of tissue, but of impairing its vitality, and thus causing it to break down more rapidly under influences which favor solutions of continuity. Hence we have presenting, as *characteristic* initial lesions of syphilis, either a neoplasm, dense, insensitive, and covered with unbroken and apparently normal cuticle or mucous membrane, or, from the causes above mentioned, some one of the various characteristic *solutions of continuity* associated with the initial lesson of syphilis.

In addition to the foregoing *characteristic* lesions, we may also find early local disturbance, in various forms and from various causes, associated with the beginnings of syphilitic cell accumulation, but presenting no features *characteristic* of syphilitic inoculation.

The known fact, however, that syphilitic infection not unfrequently follows a wound of inoculation, which heals promptly, and with no subsequent solution of continuity, is sufficient to prove that *neither* INFLAMMATION *nor* ULCERATION *are essential features in the results of a syphilitic inoculation.*

Thus, wounds, abrasions, broken vesicles, pustules, or ulcers *may* receive a syphilitic inoculation, and progress or heal as if no such inoculation had taken place.

It is then evident that no *positive* differential diagnosis can be made *at once* between lesions which *will* be followed by syphilitic infection and those which *will not*. A positive decision cannot be rendered until after such *interval*, from latest exposure, as may be required to develop some characteristic cell accumulation, either on the site of the lesion or in the adjacent lymphatic channels and glands.

This *interval* is recognized by all authorities as a clinical fact, and is characterized as "*The Period of Incubation of Syphilis.*"

The term was invented in accordance with a belief (formerly prevalent) that the *virus* of syphilis was a mysterious impalpable influence. That this, having entered the system at a given point, instantly permeated the fluids and solids of the entire organism. It then accumulated by "a kind of germination" until the point of "*saturation*," or extreme limit of tolerance, was reached. This event was announced by a peculiar and characteristic action, at the point of entrance of the virus, which was termed the *Chancre*.

It is plain, however, that such a view of syphilitic infection can have no support, if we accept the view of a cell degradation, and a systematic syphilitic infection, in accordance with known histological, physiological, and pathological laws.

It is then to the local conditions, at the point of inocu-

lation, that we must look for the earliest evidences of syphilitic action. This is afforded, at first, through the microscope, by discovery of a densely packed *non-inflammatory* cell accumulation which steadily increases until it is appreciable to the ordinary touch. The same cell accumulation is also seen to occur in the lymphatic vessels connecting the initial lesion with the adjacent lymphatic glands. These vessels are not unfrequently found obstructed and indurated, and, like knotted cords, the size of a crow's quill or larger, often easily traceable to their gland termination. The associated blood-vessels are never narrowed or interrupted from this cause.*

The local induration of a suspected lesion, however, is not *positive* evidence of syphilitic action. Cell accumulation sufficient in degree to produce well-pronounced induration may result from *irritation* of a *simple* lesion. Thus, an herpetic vesicle, or pustule, even a simple abrasion, through friction from clothes, or from applications of caustics or astringents, may become indurated sufficiently to raise grave suspicions of syphilis.

Induration in such cases is always the result of *inflammatory* action.

The induration of *syphilis* is essentially *non-inflammatory*. The differential diagnosis is aided by means used to combat the inflammatory condition. Under the influence of rest and local sedatives the *incidental* induration is promptly dissipated; *in the initial lesion of syphilis* the induration is made more salient. Sometimes, though rarely, the induration is quite obscured by a slight localized serous effusion, which gives it a bluish appearance. This I have observed in several cases where the lesion was on a finger. The same condition quite frequently succeeds well-marked indurations near the *fossa glandis*, and is so persistent as to become a valuable diagnostic mark.

The induration may be said to be *characteristic* when

* The only recognizable cell accumulation in syphilis is confined to the lymphatic system. If, during the period of so-called incubation, the syphilitic influence has found access to the general circulation, no evidence of it has ever been discovered in the condition of blood-vessels, or of the blood, or in the conditions or sensations of the person so affected.

insensitive, dense, and resistant, like cartilage. If pressed between the thumb and finger it becomes exsanguinated, and like in appearance to the tarsal cartilage, when the eyelid is turned back.

Even this most positive evidence of syphilis cannot be accepted as conclusive. The induration of a commencing *epithelioma* simulates it very perfectly, and, if an open lesion, its secretion under the microscope presents appearances almost identical. In summing up the whole matter, we are forced to confess that a final decision in any given case is not warranted, until some other evidence is present besides the appearance and character of the *local* lesion.

In all cases, where possible, *the person from whom syphilis may have been acquired* should be carefully examined.

In making such examination, search not only for the initial lesion, but for each of the possible *secondary* manifestations. Even when such are found, it must be borne in mind that *a breach of surface on the person exposed* is essential to the acquirement of syphilis, and that this surface must be brought into CONTACT with the syphilitic secretion, either *directly* or *mediately*. So that while the presumptive evidence furnished by *confrontation* is often strong, it is not *necessarily* conclusive.

The following cases will serve to illustrate the importance of caution in arriving at conclusions in regard to the true nature of venereal lesions :

Case I. Mr. T., aged twenty-three, on the fourteenth day after his first and only connection, noticed a slight urethral discharge. Under the microscope this was found to be distinctly purulent. No pain on urination. Meatoscope showed the mucous lining of the urethra deeply congested for half an inch. Beyond this there was no purulent secretion; appearances normal. The difficulty was, evidently, not *gonorrhœal*. A *syphilitic inoculation* was suspected. Examination of the woman with whom he had connection *showed her to be passing through the active stages of syphilis*. No initial lesion was found; but the inguinal, epitrochlear, and cervical glands were characteristically enlarged. Several *mucous*

tubercles were discovered within the vulva; one in the *cervical sulcus*, and three on the *os tinca*. Besides these there was a double row around the *anus*, eroded and secreting pus freely. In the presence of such evidences of syphilis, it seemed impossible that the young man could have escaped infection. The urethral discharge was probably caused by a syphilitic inoculation which had not yet produced a well-defined initial lesion. Inguinal glands of both sides slightly enlarged. Treatment for syphilis deferred (much against the patient's wish) until evidence of syphilis should become more positive. *The urethral discharge gradually declined and disappeared entirely in about a month.* Up to the present time (four years from date of exposure) patient has not had the slightest evidence of syphilitic trouble.

Case II. Mr. H., aged thirty, had a suspicious connection in May last. On the third day following he noticed several small pimples on his prepuce. Fearing venereal disease, he consulted his family physician, who at once pronounced the trouble a simple *herpes*. A mild lotion was recommended. Under its use all evidences of disease disappeared within a few days, and the patient was assured, in the most positive manner, that he was free from disease. June 10th, four weeks after the suspicious connection (and more than two after he had been pronounced free from disease), the patient was brought to me by his physician for an opinion in regard to a small, hard, eroded nodule on the former site of the *herpes*. Inguinal glands, on corresponding (right) side, characteristically enlarged. My belief that the nodule was an initial lesion of syphilis was strongly expressed, and the gentleman was put upon a mercurial course. A month later he called, presenting a well-marked roseola, with the usual secondary gland enlargements. His wife, who accompanied him, had an indurated initial lesion on the lower border of the meatus urinarius and well-marked inguinal enlargement.

Case III. Mr. W. V. No unusual trouble until two and one half months ago, when ten days after a suspicious connection he noticed a small sore on the right side of the penis. He consulted a surgeon, by whom

he was informed that he had a "*soft chancre*," that he would quickly destroy it by application of nitric acid, and further, that *there need be no fear of subsequent trouble*. The cauterization was made, was repeated several times, at intervals of three or four days; healing finally taking place in about three weeks. Patient had connection with his wife the night previous to receiving the surgeon's opinion that he had a *chancroid*; no connection since.

This gentleman called upon me to ascertain the cause of a papulo-pustular eruption which was confined to the face and neck. I at once recognized it as syphilitic; examined the cicatrix of the so-called *chancroid*, and found it distinctly indurated. Gland enlargements of elbow and neck, all well pronounced and characteristic.

In answer to an anxious inquiry as to the possible infection of the wife, I was obliged to admit the possibility of such a calamity. He assured me that she had been, and was then, perfectly well in every respect—"*except that she had some little swellings in the right groin; not the least pain.*" An examination of the lady on the following day disclosed characteristic gland enlargements, not only in the groin, but in the arm and neck. No search was made for the initial lesion. She was put upon constitutional treatment for "*a form of leucocythemia*," and remained in blissful ignorance as to the nature of her own and her husband's trouble.

LESSON VI.

Progress of the Syphilitic Infection—Course of the Disease beyond the Point of Inoculation—Infecting Cells Following the Course of the Lymph Vessels Carried by the Lymph Current to the Lymphatic Glands—Detention in the Glands from Mechanical Causes—No Evidence yet of Constitutional Disease—Recent Painless Gland Enlargements Strong Presumptive Evidence of Syphilitic Infection—Final Passage of the Diseased Cells or Germs into the *Receptaculum Chyli*, and from thence into the General Blood Current—The Period Intervening between the Inoculation and the Entrance of the Disease Germs into the General Circulation termed *the Initiatory Period of Syphilis*.

PROGRESS OF THE SYPHILITIC INFECTION.

The term CONTAGION has been used to designate the act by which, through cell contact, the syphilitic influence is conveyed from a diseased to a healthy person.

By means of the influence thus communicated, proliferation and accumulation of degraded cells, at the point of original contact (or inoculation), are claimed to result in the establishment of the initial lesion of syphilis, or *chancre*, in its various forms.

The course of the disease beyond this point is indicated, *à priori*, by the known fact* that all integumentary and cellular tissue are pervaded by lymph spaces and channels, which lead more or less directly into lymphatic vessels, and that the lymph current is constantly flowing *from* the tissues *toward* the lymphatic vessels and the glands in which they terminate.

Therefore a degraded germinal cell (syphilitic) introduced into the tissues (as by an inoculation), unless carried directly into the interior of a blood-vessel, must (itself, or its vitiated descendants) of necessity sooner or later be carried along by the lymph current to and

* Stricker's Human and Comparative Histology, Sydenham ed., vol. i. pp. 307 et seq.

into the gland of connection.* All clinical observations confirm this view: first, in the discovery of indurated lymphatic vessels leading from the point of inoculation to the gland in connection; second, by the subsequent enlargement and induration of such glands; third, their acceptance as a necessary sequence of the inoculation, and as positive proof of the nature of the disease.

The process through which the syphilitic influence thus gradually advances and finally invades the general system is termed the process of SYPHILITIC INFECTION.

The progress of the *syphilitic infection*, from the date of its *genesis* at the point of inoculation to its characteristic appearance in the glands nearest the point of inoculation (the glands of connection), varies in different persons, from causes not thoroughly settled, but which are indicated in note on page 96.

The degraded cell elements, then, effecting an entrance into the substance of the lymphatic gland, are here detained by the peculiarities of the gland structure, and perhaps by other inhibitory influences, for a period varying, in different instances, from twenty to sixty days. This period is recognized by all clinical observers, and has been described as the second incubation of syphilis. It is certain, however, that no syphilitic influence has yet been discovered in the general blood current during this period, and there is sufficient reason to suppose that the diseased elements are confined to the glands of connection, and those intervening more deeply between these and the thoracic duct.†

* "The wandering red blood globules mostly again return into the circulation through the lymphatics. The wandering white blood corpuscles probably return into the circulation in the same way." — Wagner's Manual of General Pathology, Am. ed., p. 151.

† A similar inhibitory influence, exerted by the lymphatic glands in cancerous diseases, is cited by Virchow, in his Cellular Pathology, Am. ed., p. 221, with the following explanation: "We can account for this by no other supposition than that the gland collects the hurtful ingredients absorbed from the breast, and thereby for a time affords protection to the body."

It has been suggested that if the disease were really so localized, prompt *enucleation* of the initial lesion and of the affected glands might prevent general infection. It must be remembered that the infective cells, each of which is potent to act as a starting-point for systemic infec

The glands of connection become gradually enlarged, apparently through the proliferation and accumulation of cells in their interior.

When the initial lesion is located upon the genital apparatus, on the glands or on the body of the penis in the male, or on the labiæ or within the vulva in the female, the lymphatic glands of the groin become enlarged, so that, as a rule, several may be distinctly recognized by the touch, varying from the size of a small pea to that of a large bean. Sometimes these enlargements are apparently confined to the side corresponding with the initial lesion—sometimes to the opposite side; usually, however, the glands of both sides are more or less enlarged. Hard, nearly or quite painless, and movable, their *gradual accession within two or three weeks after a suspicious venereal exposure* is strongly indicative of syphilitic origin, without regard to the character of the *local lesion*. If this is present and indurated, the syphilitic character of the trouble is no longer doubtful. It must, however, be borne in mind that glands enlarged through the influence of scrofula cannot be with certainty distinguished from those of syphilitic origin.

They are found in the same locations, and, though usually less positively indurated, are still sufficiently so to prevent certain diagnosis. When the initial lesion is on the lips or in the mouth, the submaxillary gland is affected. Wherever situated, it is always the *glands of*

tion, are not only present in untold numbers at the point of inoculation, but that (as shown by Beisiadecki's microscopic researches) the walls of the intervening lymphatic vessels are lined if not packed with them. Hence any proposed surgical extirpation of the disease must imply the entire removal of all the lymphatic connections of the initial lesion and the glands of connection. A procedure not only without sufficient promise of benefit at this stage of the infection, but even at the earliest date after inoculation, the necessary ignorance as to the degree of implication of the lymph spaces and vessels in the vicinity of the inoculation would in all probability render all such means of preventing the spread of the infective processes of uncertain value.

Early excision of the initial lesion may, however, be found to modify the intensity of the subsequent general infection. My own experience in twelve cases of excision during the past eight years would warrant this inference.

connection (i.e., those nearest to the seat of inoculation) which are involved. Such enlargements are called syphilitic *buboes*.

The complete freedom from true inflammatory action which has been shown to characterize the induration of the initial lesion of syphilis, and the lymphatic vessels in connection with it, is equally characteristic of the enlargement and induration of the associated lymphatic glands. When attaining sufficient size to interfere with freedom of motion of a part, or where from any cause they are subjected to undue pressure, a degree of tenderness may result. From the same cause inflammation and even suppuration may occur in highly scrofulous subjects. Such accidents, however, are exceptional, and do not materially lessen the diagnostic value which attaches to *recent and painless* enlargement of lymphatic glands.

The progress of the syphilitic infection, which has been steady and persistent from the moment of inoculation to the engagement of the nearest lymphatic glands, appears now to be arrested. Gradual increase in their size and density alone indicates the activity of the infective process, until, after a period (varying in different instances from twenty to forty days), evidences of constitutional infection may appear.

Access from the surface to the general blood current, through the lymphatic spaces and vessels, *necessitates* passage, 1st, through the gland in immediate connection; 2d, through any other glands or vessels which may intervene between them and the great lymph channels; passage from thence into the general blood mass is immediate.

Thus, the delay between appreciable implication of the glands of connection and earliest evidences of constitutional syphilis is explained in accordance with known histological and physiological laws. Hence, it is only *after* a time sufficient for the passage of the diseased elements through the natural barriers, the lymphatic glands, to the general blood channels that systemic infection can take place.

With this view of the *progress of the syphilitic infection*,

the interval between the date of inoculation and the introduction of the diseased elements into the general circulation may be appropriately termed the INITIATORY PERIOD OF SYPHILIS.

LESSON VII.

Varieties and Complications of the Initial Lesion of Syphilis—The Indurated Papule—2. The Dry Scaling Patch—3. The Chancrous Abrasion—4. The Saucer-shaped, Non-suppurating Chancre, with Indurated Base and Edge—5. The Elevated, Moist, Velvety Papule—Modifications of the Foregoing—1. The Muroid Chancre—2. The Inflamed or Suppurating Chancre—3. The Phagedenic or Gangrenous Chancre—Modifications of the Initial Lesion of Syphilis from Implantation of Chancroid or other Secretions upon it.

(1) The initial lesion of syphilis begins by a process of **UNDUE GROWTH** and **MULTIPLICATION** of normal germinal cells, induced by contact (through a lesion of mucous membrane or integument) with **DISEASED** or **DEGRADED** cells derived from a person suffering from **SYPHILIS**.

(2) Cells thus generated accumulate at the point of initiation, in a circumscribed portion of the surrounding and underlying tissue, and also in the walls and interior of the blood and lymph vessels of the tissue so implicated, and thus form a characteristic neoplasm, which is termed the *Initial Lesion of Syphilis*—of which there are five characteristic forms, namely :

(1) The Indurated Papule.

(2) The Dry Scaling Patch.

(3) The Chancrous Abrasion.

(4) The Saucer-Shaped Non-Suppurating Chancre, with indurated base and edge.

(5) The Elevated, Moist, Velvety Papule.

And as modifications—

The Muroid Form.

The Inflamed or Suppurating.

The Phagedenic or Gangrenous.

Also modifications arising from implantation of the *Virus of Chancroid* or other *Vicious Secretion*, upon the Initial Lesion of Syphilis of any one of the above-named forms.

The initial lesion of syphilis may be situated at any

point on the surface of the body, or it may be concealed within the orifice of the meatus urinarius, the anus, or the mouth.

The differences in form of the initial lesion of syphilis are the legitimate and direct results of interference, to a greater or less degree, with the circulation of the tissues, at or beneath the point of initiation, of the abnormal cell-growth. Thus, in regard to the first-named form :

(1) The indurated papule is a dense neoplasm in the cellular tissue, *movable* under the skin, and hence not materially impeding its functions. Complete absorption of this morbid growth may take place, and the organism become thoroughly contaminated with syphilis, without the occurrence of any open lesion.

(2) The dry scaling patch always occurs upon integument, and the cell accumulation is diffused and quite superficial, producing an induration which to the touch is like *parchment*; hence the term "*parchment induration*," applied to this lesion. Interference with the circulation in this case is not sufficient to prevent the evolution of the epidermis, but its development is impeded, and layers of dry epidermic scales cling to its surface, giving it a characteristic scaly appearance.

(3) The chancrous abrasion occurs upon an indurated papule, which by peripheral cell-growth has come to involve the circulation of the cutaneous or epithelial structures to the extent of rendering them friable and easily abraded. Imperfect evolution of the underlying cell elements results in a free shedding of the superficial layers from the moist surface of the lesion. Under the microscope these are seen to be like laminated epithelial scales, and constitute a significant mark of *chancrous abrasion*.

(4) The saucer-shaped non-suppurating chancre, with indurated base and edge. In this form a characteristic loss of tissue has taken place (almost entirely at the expense of the adventitious cell-growth), through the continuance and extension of the causes which produce the *chancrous abrasion*; loss of tissue, as in that case, also occurring, not through the suppurative or ulcera-

tive process, but by that which Virchow has termed a *necrobiosis* (death from altered life), that is, from a gradual obstruction to the processes of nutrition of the affected part. The secretion of this form of initial lesion is scanty, free from pus, and presents under the microscope the squamous epithelial elements found in the secretion of the chancreous abrasion.

(5) The elevated, moist, velvety papule, is neither more nor less than the previously described lesion, "*The saucer-shaped non-suppurating chancre, with indurated base and edge,*" upon which the *granulation tissue* of Billroth has been developed. This tissue is described in Billroth's "Pathology," Am. ed., p. 93, under the head of "*Proliferating fungus granulations.*" He says, "The most frequent cause of the development of such granulations is *any local impediment to healing, such as rigidity of the surrounding skin*, so that the contraction of the cicatrix is difficult." This rigidity in the case of the moist velvety papule is caused by the characteristic induration of syphilis, always associated with this form of initial lesion.

We shall consider next the *modifications* to which the different forms of initial lesions are subject.

(1) The mucoid chancre, is that modification of the *moist velvety papule*, which arises from the occurrence of a diphtheritic membrane, or deposit, upon its surface, giving it the appearance of that secondary or constitutional manifestation of syphilis known as the *mucous papule*. This modification usually takes place coincidently with the appearance of mucous papules or patches in other localities. The *induration* associated with the *initial lesion*, thus modified, and its entire absence in the *mucous papule*, will constitute the distinguishing difference between these lesions.

(2) The inflamed or suppurating chancre. In any of the open initial lesions subjected to persistent irritation from friction of clothes, repeated coition, application of caustics, alcoholic excess (especially in the scrofulous and debilitated), an inflammatory action may be set up. This soon results in pus formation, and a more or less active necrosis, so like in character to

that occurring in chancroid, that errors in diagnosis are easy. The, now purulent, secretion of the chancre is found to be contagious, producing by auto-inoculation a sore, identical with true chancroid, thus further obscuring the differential diagnosis. Previous history, and the induration more or less distinctly marked, will usually be sufficient to indicate the true character of this lesion.

(3) The phagedenic or gangrenous chancre. In certain cases of the inflamed or suppurating initial lesion the indurated tissue becomes livid in color quite suddenly, and exhales a peculiar sickening odor, announcing the occurrence of gangrene. This results from arrest of the vascular supply to the induration, through an aggravation of the causes which led to the antecedent *necrobiosis*. This view is sustained by the known influence of mercury in arresting the destructive process thus set up in the initial lesion, while in any other form of gangrene the influence of this drug is known to be pernicious, and also from the fact that the loss of tissue is usually limited to the induration. When the death of tissue occurs by molecular continuity, the lesion is said to be PHAGEDENIC; when the induration sloughs out *en masse* it is called GANGRENOUS. The influences which tend to convert the inflamed or suppurating initial lesion into the phagedenic or gangrenous are *predisposition to suppuration from any cause*, constitutional dyscrasia, alcoholic excess, low, irregular life, etc.

All forms of the initial lesion in syphilis may be modified and more or less obscured by the occurrence of ulceration from any cause upon the site of syphilitic inoculation.

No surface changes at the point of entry of the syphilitic virus or principle can affect the course of the syphilitic infection after the disease germ has passed into lymph channels (spaces or vessels) below that surface. The characteristic local evidences of syphilitic infection may, however, be modified and more or less completely obscured by accidental lesions, such as herpes, resulting from contact with vicious vaginal and

uterine secretions, or other causes, or by contact of the lesion of syphilitic inoculation with the virus of chancroid.

Such lesions pursue their course uninfluenced by the syphilitic cell-proliferation previously inaugurated, and may thus obscure diagnosis until evidences of constitutional infection are manifest.

Hence, wherever the *possibility* of a syphilitic infection is present, any breach of tissue, whether a simple abrasion or fracture of mucous membrane or integument, or any vesicle or pustule, whether from general or venereal causes, whether healing as if simple or pursuing the characteristic course of the chancroid, then in such case, opinions in regard to the *presence* or *absence* of the *contagium of syphilis* must be reserved until such time, from the date of latest exposure, *as will equal the longest period known to obtain between inoculation and syphilitic infection*, as indicated by induration of the local lesion and enlargement and induration of the adjacent lymphatic glands. This is not less than forty days.

LESSON VIII.

Treatment of the Initial Lesion of Syphilis by Excision—Description of Operation and Subsequent Care—Constitutional Treatment also Essential—Local Measures where Excision is not Applicable—Relief from Accumulated Cell Material causing the Chancre occurs only through Fatty Metamorphosis—Mercury the most Efficient Agent both Locally and Internally—Forms, Doses, and Modes of Administrations—Treatment by Inunction—General Care—Treatment of Modifications—1. Mucoid Form—2. Inflamed or Suppurating—3. Gangrenous—Treatment of Concealed Initial Lesions—Treatment to be Continued after the Cure of the Initial Lesion—Increase or Diminution of the Induration a Barometer for Treatment—Enlargement and Induration of Lymphatic Glands nearest to Initial Lesion the First Positive Evidence of Progress of the Infection.

TREATMENT OF THE INITIAL LESION OF SYPHILIS.

First, by *Excision*. Whenever a well-determined initial lesion is situated in loose tissue (integument or folds of prepuce in males, or of the vulva in females) the earlier removal by excision is accomplished the better. Not with the expectation of preventing constitutional infection (which, as a rule, is inevitable before the local lesion is discovered), but as far as possible to remove a focus of dissemination for diseased elements, and to diminish the danger of conveying disease to others.

The infective neoplasm, whether under sound skin or appearing in any one of the forms or modifications previously described (except the inflamed or suppurating), should be removed *entire*. The resulting wound heals, as a rule, by first intention. Even when the induration is large, little if any deformity remains after cicatrization. Practically the indurated tissue is a foreign body, and its thorough removal requires the sacrifice of but little of the surrounding healthy structure. Favorably situated open initial lesions of long standing may be promptly cured in this way.

For the performance of this operation first cleanse the parts thoroughly by gentle bathing in warm water.

In all open lesions apply a solution of carbolic acid of a strength of one part of the acid to forty parts of water, after which raise the mass of induration between the forefinger and thumb, and encircle it firmly at the base with a bit of fine silver or malleable iron wire. The indurated part may be separated from the normal tissue in the same way by compression between the arms of a bent probe, being careful to include the entire induration.

Now with a narrow, sharp-pointed bistoury pierce the tissues at the centre beneath the compressing wire probe, and cut well under and out, including all the indurated and a little of the sound tissue of that side. This effected, from the place of beginning, cut out in the same way on the opposite side. Be assured by careful examination that every portion of the neoplasm is removed, then introduce interrupted sutures of silk or silver wire at intervals of a quarter of an inch or less.

The patient should be kept in the recumbent position, the parts constantly wet with carbolated water, until the third day, when on removal of the sutures union by first intention will, as a rule, be found to have taken place.

The resulting cicatrix may indurate, to a greater or less degree, but rarely, if ever, to the extent of inducing a solution of continuity.

In no case does this procedure lessen the necessity for *Constitutional Treatment*. The indurated papule, when so located that excision is unadvisable (as on the *glans penis*, or involving the tissues of the *corpora*), may be subjected to applications of the oleate of mercury (six per cent solution), or any correspondingly mild mercurial ointment. When the mucous membrane or cuticle covering the induration is abraded, or at any stage of simple *necrobiosis*, dusting the surface with dry calomel and protecting it with a thin layer of dry lint is then serviceable. Calomel, in combination with lime-water, in the proportion of a drachm to the pint (*lotio nigra*), or bichloride of mercury, half a drachm to the pint of lime-water (*lotio flava*), are both much esteemed as applications to the open initial lesion. The tissue

metamorphosis and absorption, which are requisite for the removal of the syphilitic neoplasm, are most readily induced by the internal administration of some one of the various mercurial preparations. In all forms of the initial lesion the chief obstacle to resolution or healing is the *mechanical* interference to nutrition occasioned by accumulated cell-growth. Its removal must occur through the process known as *fatty degeneration*. The most active and reliable agent in effecting this and in promoting the necessary subsequent absorption and elimination, is mercury; hence the internal administration of some mercurial preparation is *essential* in all well-determined initial lesions. The proto-iodide (so-called *green iodide*) of mercury, in pill, one quarter grain to one grain, three times a day. The biniodide in one thirtieth to one twelfth. The bichloride in doses of from one thirtieth to one twelfth of a grain. The mass. hydrargyrum, from two to four grains, and may be judiciously combined with iron. A favorite formula, and one which I usually prescribe, consists of two grains mass. hydrarg. with one of the exsiccated sulphate of iron. This may be made into a pill, and if intestinal irritation ensue one fourth grain of the watery extract of opium may be added. This pill was first suggested to me by the late Dr. Bumstead, and is sometimes known as pil. *Duo* or *Duplex*. Any of these forms of mercury may be administered (in suitable vehicles), in the dose deemed judicious for the presenting case, three times a day (increasing the dose if necessary to the limit as above indicated), until the constitutional influence of the drug is manifested by a spongy and sensitive condition of the gums or a slight mercurial odor in the breath.

In introduction of mercury into the system through inunction of the mild ointment of mercury, where this drug is not well borne by the digestive apparatus—a dram rubbed in morning and evening—changing locality each application—thus, in right axilla in morning, left at night; then under left knee, then right; then right axilla again, and so on, until the desired effect on gums is

produced; then reduce amount so as to keep just below this point.

The mercurial impression should be maintained as nearly as possible at this point *until complete absorption of the local neoplasm has been effected*. Its further employment will be considered in the Lessons on Treatment of General or Constitutional Syphilis.

Cleanliness, freedom from friction and irritation from all other causes, simple diet, and abstinence from alcoholic stimuli, are necessary to the most favorable results in treatment of the INITIAL LESION as well as all other forms of syphilis.

In regard to the modifications of the initial lesion of syphilis: The mucoid form requires, in addition to the constitutional treatment previously described, the application of the solid *argentum nitratis* (or some other caustic), sufficient *only* to destroy and subsequently to repress the exuberant granulations. The inflamed or suppurating initial lesion, requires rest and opiate or sedative dressing, as the *lotio plumbi et opii*, in the proportion of five grains each to the ounce of water; or the powdered *iodoform*, simple, or with an equal part of *tannic acid*, which seems to deodorize in some degree, and possibly increases the efficiency of the *iodoform*. In the gangrenous form the powdered *iodoform* is efficient as an antiseptic.

Poultices of powdered charcoal are also of value, but the internal administration of mercury must not be neglected *while the gangrenous action is limited to the induration*. Passing beyond this point, prompt and thorough cauterization under ether, with the fuming nitric acid or the galvano or the gas cautery, should be done so as completely to destroy the tissues involved in the destructive action. Opium is of great value in subduing pain in these cases, as well as on account of its bracing effect on the nervous system. Occurring in debilitated or highly scrofulous subjects, as is usually the case, attention should be given to general support, by generous diet, quinine, and iron. The *potassio-tartrate of iron*, in fifteen- to twenty-grain doses every three or

four hours (as recommended by Ricord), seems to exert a specific influence over gangrenous conditions.

It must not be forgotten that healing and apparent cure of the initial lesion does not mean *cure* of *syphilis*. After disappearance, more or less complete, the induration may return. Not unfrequently it may be observed to increase or diminish in apparent sympathy with the progress or abatement of the constitutional disease. From this fact the local induration has come to be considered by some as a reliable barometer, by which the effect of general treatment may be appreciated. The duration of the initial lesion varies greatly in different cases, sometimes disappearing within a few weeks, and with it every trace of induration; at others it continues as an induration, more or less distinctly marked, throughout the active stage of the constitutional infection. Enlargement and induration of the lymphatic glands, nearest in connection with the initial lesion, constitute the first positive evidence of the progress of constitutional infection.

Concealed initial lesions (as within the meatus urinaris or the anus) may be treated with bougies or suppositories medicated with opium, salicylic acid, or iodoform.

LESSON IX.

On the Early Manifestations of Syphilis—The Organism not Infected at once, but by a Gradual Process, through Normal Physiological Channels—No Constitutional Evidence of the Disease at any Point until at least Thirty or Forty Days after Inoculation—Roseola of Syphilis—Clinical Case—Roseola of Syphilis shown to be the Result of Sympathetic Nerve Disturbance like Simple Roseolas, and not Caused by the Local Accumulation of Syphilitic Material—Pigmentation Due to Exudation of the Coloring Matter of the Blood and not to a Specific Material—Clinical Case Illustrating the Papular Eruption of Syphilis and its Comcomitants—Supernumerary Epitrochlear Gland—Mucous Patches Simulating Diphtheria—The Secretions of all Lesions of this Stage of Syphilis Inoculable—Note in Regard to the Contagion of Syphilis—Importance of Care to Prevent the Same—The Necessity of an Artificial Port of Entry for a Great Security against the Acquirement of the Disease—Illustrative Cases.

EARLY CONSTITUTIONAL FORMS OF SYPHILIS.

The cases to which your attention is now invited are in illustration of the acute stages of syphilis, and these include all the manifestations of the disease during which a contagious element pertains to it. The first manifestation, the "*initial lesion*" in its varied forms, has already been considered. The adjacent gland enlargements, resulting from the same processes of cell proliferation and localized accumulation, have been seen to be an inseparable adjunct in every case, but they have been present without the least evidence of constitutional disturbance. No sensation of the patient, nor any recognized physical sign, suggests anything more than a local disease. Notwithstanding the claim of certain authorities that syphilis is a constitutional disease at the moment of inoculation, and that, as Billroth puts it, the "organism is infected at once,"* all the scientific research yet made, goes to prove that the disease progresses by individual infection of germinal cells, from

* Billroth's Surgical Pathology. Am. ed., p. 386.

the point of inoculation, along the lymphatic channels, one of the chief offices of which, is to carry germinal material from the tissues into the general blood current. That their progress is slow and is obstructed by the lymphatic glands is made manifest, in every case, by the enlargement of all those immediately interposed between the point of inoculation and the great lymphatic reservoir, the *receptaculum chyli*, and by the fact that, until at least thirty or forty days after the inoculation, there is absolutely no evidence of the disease having reached the general blood current. In other words, it may be said, that, up to such time, the infection is confined to the locality of the inoculated point and the glands in immediate connection with it, and cannot yet be said to be a constitutional disease. At about the sixth week, however, an eruption presents, as the first evidence that the disease has found access to the system at large. This is well shown in the patient now before you. He has a history of suspicious venereal connections—of one in particular about two months since. He accidentally noticed a small abrasion on the inside of his prepuce, near the “bridle” on the left side, which bothered him for several weeks, but was never of sufficient account to consult a surgeon about, and finally healed. Yesterday, after getting quite heated in a running match, his face became spotted with red blotches, and, on going to bed, he found his body more or less covered with them. Here you have a fine specimen of the roseola of syphilis. Its history and advent are characteristic. There is a distinct thickening easily felt at the point referred to as the site of the abrasion. It is not as characteristic as in many cases you have seen, but is sufficient, when taken in connection with the history, the distinctly enlarged inguinal glands, and the roseola, to characterize the initial lesion of syphilis.

The glands of the cervical region are also enlarged, so that we may accept the case as a classical one of early constitutional syphilis, which I have been accustomed to designate, on account of the tendency to localized accumulation in the glands at a distance from the point of inoculation, and in the skin at a later period,

*as the period of general infection and localized cell accumulation.**

In its general appearance this exanthem is not unlike a slight eruption of measles. Pressure with the finger in the syphilitic roseola causes the color to disappear completely when the eruption is recent, as in the present instance, but when it has existed for some weeks a brownish or copper-colored stain is left. The longer the eruption remains, the more likely it is to leave its characteristic trace, namely, a coppery stain, unaffected by pressure. The color of this stain here, as well as in other syphilitic eruptions, is usually considered valuable as a diagnostic mark of syphilis. With this exception, however, it is not materially different from an idiopathic roseola. Like the latter, it appears suddenly, often during or following any exercise which gives a violent impetus to the circulation of the blood, such as rowing, dancing, or running.

Pain or other premonitory symptom is not necessarily associated with it. Sometimes it is slight, consisting only of a few pale spots; while again it is profuse and highly colored, and occasionally slightly elevated. But it never develops into any other form of lesion. Beyond a reddish blotch, it is never more than a copper-colored stain; and even this stain, the only really salient point of difference between simple roseola and that which is thus seen to be associated with the advent of constitutional syphilis, will be shown to result from simple causes. It is true that this eruption is popularly accepted as syphilitic, in the sense that it is caused by the local presence of syphilitic material, and is to be gotten rid of through the same means by which the specific cell accumulations (forming papules in the skin and mucous membranes) at a later stage of the disease are eliminated. I believe, however, that this can be shown to be an error, and that this roseola, like all the other roseolas, is the result of a purely functional disturbance. Bäumlér says of it: "In every syphilitic

* For further information as to the causes of the "Roseola of Syphilis," see Otis on the Physiology, Pathology, and Treatment of Syphilis, p. 17. New York: Putnam. 1881.

efflorescence there is a circumscribed dilatation of blood-vessels, together with a certain amount of exudation of white-blood cells into the sheaths of the vessels merely, and into the surrounding tissue. The greater the degree of stasis the more abundant will the exudation of red corpuscles be; and *it is the alteration of the coloring matter in these red globules which imparts to the color of the syphilides, after they have remained for some time, their yellowish or brownish shades.* These shades are more distinct in proportion as the congestion of the vessels thereby occasioned recedes, and they are more pronounced the longer the stasis has continued. In the same way *any efflorescence* or its immediate vicinity, or scars following ulcers on the lower extremities, *not due to syphilis*, may assume this color. Long-continued dilatation of capillaries and stasis of the blood are all that is necessary to produce pigmentation."

Case II. Here is another case presenting the characteristic developments of syphilis at a somewhat later period, and affords us an excellent opportunity of a further study of its leading features. The initial lesion is said to have occurred four months ago, and one month after the suspicious connection. It healed in a couple of weeks. During its presence the patient says it looked like a simple sore, but there is still here a little knot of induration, situated in the loose tissue of the prepuce, indicating the character as well as the locality of the lesion. We find also well-marked enlargement of the lymphatic glands of the groins, and particularly below Poupart's ligament, on both sides, which latter is quite unusual at so early a period of the infection. You also observe very plainly an eruption on the forehead. It is papular in character, and is characteristic of the secondary eruption of syphilis, the first eruption being a roseola, which usually comes on at a period varying from six weeks to two months after the appearance of the initial lesion. Then, after another interval of about the same length of time, we get the second eruption, which is papular in character; the first—the roseola—being macular, and occasionally slightly elevated. The second eruption has been described by authors as

of a raw-ham color or a coppery hue. It is rosy in color when it first makes its appearance, but grows darker and darker, until finally the papule passes away, leaving a distinct reddish or copper-colored stain. You will observe in this patient that the eruption is very prominent and wide-spread over the back. Some of the papules are surrounded by a little exfoliated epidermis, which is known as the "collarette of Bielt," and is considered characteristic of a syphilitic lesion by some writers. It is simply an exfoliation of the epidermis of the surface of the papule, seen most distinctly at its base, and is dependent upon modified nutrition, caused by infiltration of the papules with cells. These interfere with the vascular supply of the part, and we get the exfoliation here exactly in the same way that we get it at the point of initial lesion—from accumulation and concentration of cells in that locality. When this exfoliation is present on a papule, it affords an additional proof of the syphilitic character of the trouble. You will, however, see cases of psoriasis where the scales have been brushed off, which so nearly simulate the syphilitic papular eruption that it is impossible to distinguish between them; and without other aid we are often obliged to wait further developments in order to make the diagnosis. Fortunately, however, for the diagnosis, but unfortunately for the patient, we nearly always have, at the time of the occurrence of this papular eruption, other lesions which aid us in making the diagnosis. The glandular enlargements in the groins, of the neck, and also in the epitrochlean spaces—sometimes one, sometimes all—ought to be well marked by this time. You will observe here on the neck a gland which can be seen at quite a distance—it is so much enlarged. There is a group of enlarged and indurated glands just behind the sterno-cleido-mastoid muscle, and another farther back on either side. Here in the right epitrochlean space there is an enlarged gland about the size of a large pea, and what I do not remember to have ever found before, viz., another gland about two inches higher up, only a trifle smaller than the first. Quite often the epitrochlean

gland, instead of being in the little space above the internal condyle of the humerus, is found an inch or two or three inches higher up, between the borders of the biceps and the triceps; but a supernumerary gland, as in the present instance, is very rare. By this time also papules occur in the mucous membrane, and these are especially characteristic, there being nothing else which resembles them, unless possibly in psoriasis. When syphilitic papules occur in mucous membrane they usually soon become eroded and covered with a diphtheritic pellicle to greater or less extent.

Mucous patches—really papules—in the mouth are characteristic of syphilis in its acute stage, and are present in a marked degree in this case. The mouth and the tongue are literally covered with them to an extent which you rarely see. These papules, which appear on the tongue, throat, and mouth, are superficial, and so flat that they are scarcely if at all raised above the surrounding surface or spread over an area varying from the size of a pea to that of half a dollar or larger, having often a gray or pearl colored diphtheritic edge which occasionally festoons the edge of the soft palate, forming a very characteristic and unmistakable mark of syphilis. Some time ago I was called to see a man who was supposed to be suffering from diphtheria. I found him surrounded by his family, who were in great solicitude about him. On looking into his throat I saw this characteristic festooning of the palate, and did not hesitate a moment in making up my mind that the trouble was syphilitic. Soon having an opportunity to speak to the young man alone, I discovered that he had syphilis, although he had not before been aware of it. The mucous patch is also liable to occur between the toes or any place where there is habitual moisture. Just at the verge of the anus is a favorite seat for it; and knowing this fact, examination of this locality will often help you out in the diagnosis of an obscure case. The mucous papule, from its prominence when on the skin or semi-mucous membrane about the anus, is usually called a mucous tubercle, and is quite characteristic in this patient, as you see.

You should bear in mind that the secretions of all lesions during this stage of the disease are inoculable, and one suffering from it may communicate the disease from the secretion of any open lesion upon the body or on the mucous membranes.* You will understand,

* The active period of syphilis, thus shown to be marked by excessive localized cell proliferation, is equally characterized by the contagious property attaching to cells thus generated. Inoculation of the blood, and of the secretion of all open lesions during the active period of syphilis, has been found capable of communicating syphilis promptly to healthy persons.

The physiological secretions—milk, saliva, urine, perspiration, tears, and spermatic fluid—*have not been proven to be agents of syphilitic infection.* Where apparently so, in many cases, syphilitic lesions of the mouth or breast have been found to account for the seeming inoculability of the saliva or of the milk. Repeated experiments* have been made by inoculation of the spermatic fluid of a person proven to be in the active stage of syphilis upon healthy persons, with absolutely negative results. In this we find confirmation of our position that the contagious property of syphilis is not an entity, an independent virus, pervading all the tissues and fluids of the organism, but that it is confined to the white-blood or tissue-building cells, and in this view we readily see how the physiological secretions above mentioned, which do not contain them, are found also to be free from the contagious property of syphilis.

Thus far the *only distinguishing feature* which has been recognized between normal embryonal cells and cells which make up the accumulations characteristic of the active stage of syphilis is the possession by the latter of the *contagious property*; in other words, a *contagium*—the power of setting up in other cells, through simple contact, the same disposition to rapid proliferation which the so-called syphilitic cells are known to possess. The direct result of this hasty proliferation, as far as we have yet been able to discover, *is not a destructive action.* It is simply and only what we should naturally expect from hastily generated normal material in excess of the necessities of growth and repair. In representative, uncomplicated cases it remains for a time obstructing the tissues by its presence, and then through purely normal processes, often of necessity set into operation by crowding of the newly formed cells, prolonged pressure, and consequent innutrition, and also from general causes it undergoes fatty degeneration, and is in this way finally eliminated from the affected organism.†

Bäumler virtually supports this view‡ when he says, of the active stage of syphilis, “If there are only a few local deposits, the elimination of the virus may be so much in excess of its production that the organism is gradually freed from it. *This takes place in the majority of cases, and at the expiration of eighteen months or two years the infection is entirely exhausted.*”

* Dr. Mireur, of Marseilles. *Annales de Dermatologie et de Syphilographie*, No. 6, tome viii., 1877.

† A fatty metamorphosis, entirely like that which occurs pathologically, occurs in the normal condition of the organism. Wagner, p. 305.

‡ P. 247 of Ziemssen's *Cyclopædia*, Am. ed., vol. iii.

therefore, the importance of warning the patient having such lesion of the danger of communicating the disease to others by contact. A pencil, a pipe, a spoon, a knife, or other article introduced into the mouth where mucous patches are present, some of this secretion contained in the saliva drying upon it, and afterward coming in contact with an abrasion of the lips of another person, will communicate syphilis to that person as positively and certainly as would a syphilitic venereal connection. From this you may see that syphilis is not necessarily a venereal disease, but any one exposed in the ways above referred to is liable to receive it, in which event it will follow the same course as if acquired by venereal connection. The great security which we all have against the accidental acquirement of syphilis is, that it requires an artificial port of entrance—a fracture of the skin or of the mucous mem-

Mr. Hutchinson, of London, in speaking of the contagious property which attaches to the emasculated white-blood cell, which we call pus, says, "*All living pus is contagious.* . . . I mean," he further says, "that all pus cells possess the power of setting up, when transferred to another home, if that home be a suitable one, a kind of inflammatory action similar to that from whence they themselves had originated." This, we know, results in the almost immediate death of cells in localities so contaminated. In the case of the germinal cells contaminated by contact with the syphilitic cells, however, this results only in a hasty genesis of cells, a too rapid production, which prevents their highest development; they fall by the way, are heaped up, undergo fatty degeneration, and are or may be eliminated. Nor is it alone in diseased cells that a contagious property is claimed to reside. Rindfleisch, an eminent German authority, in speaking of embryonal cells coming up from the tissue juices for the regeneration of mucous membranes, says of such cells that "*they become epithelial cells only by coming into contact with such.*" We must believe," he continues, "in a kind of epithelial infection." This, he says also, "must of course just as well obtain when embryonal formative cells approach an existing epithelial stratum, as when, conversely, epithelial elements approach embryonal formative cells." If this be true, it at once becomes evident that the contagious property is not of necessity a *virus*; and it must I think be suggested, in this view of the matter, as equally evident that the so-called *virus* of syphilis is simply a manifestation of that property or personal influence inherent in all cells, whether healthy or degraded, and which is as subtle and intangible, as incapable of material demonstration, as the influence which one mind exerts over another. Is it not then possible that the mischief which syphilis does is rather the result of an interference with the normal processes, through hasty development brought about by this influence, than of the action of a specific virus?

brane for its inoculation. Otherwise, sooner or later, we should all be likely to have it, for we could not come in contact with people who have syphilis without danger of getting it at every turn. But fortunately it requires an abrasion, an open port of entry. It is rarely through the ordinary affectionate relations between children and parents, brother and sisters, that communication of the disease takes place. If, however, an abrasion exist upon the lips of both parties the disease may be communicated from the one to the other by a kiss. I have often known this to occur in the venereal kiss, but never by the ordinary kiss of courtesy and family affection. But the liability to communicate the poison to an innocent person should be borne in mind by every one passing through the acute stage of syphilis. We must also bear in mind the fact that the disease may be transferred from a syphilitic to an innocent person, by the physician, by the use of the spatula, carelessly laying it down after examining a syphilitic mouth, allowing the secretions to dry upon it, then introducing it into the mouth of another patient before properly cleansing it. This is especially liable to occur if the second patient be a child, as by its restlessness during the examination, a lesion of the mucous membrane of the mouth may be made by the instrument. All instruments in use about the mouth, throat, or teeth should be carefully cleansed and passed through the flame of an alcohol lamp immediately after use, and certainly before use upon another person, because syphilitic lesions may be present, although unrecognized. Several well-authenticated cases have come under my observation where syphilis has been contracted in the mouth from lack of proper care in this regard. Mucous papules are very often present in the vagina or on the os uteri of females suffering from acute syphilis. In the *Independent Practitioner* for March of this year may be found a report of no less than eight cases of syphilis of the finger, in medical men, acquired through vaginal examinations or attendance on syphilitic women during childbirth; and since sending in that report I have seen two similar cases occurring in the resident medical staff of one of

the hospitals of this city. All of these cases were followed by constitutional evidences of syphilis. It is scarcely necessary to say that the early recognition and local treatment of mucous papules, patches, or tubercles, is one of the important duties attaching to the management of acute syphilis. Another characteristic lesion of the disease consists in the presence of scabs in the hair, as seen in this patient. The discovery of scabs, in this locality, sometimes enables us to make a positive diagnosis, when otherwise we would be in doubt. Alopecia, or falling of the hair, is one of the common, though not constant, concomitants of this stage of the disease. It is readily accounted for on the same principle that explains the exfoliation of the epidermis in the syphilitic papules. The crowding of newly formed cells in the vicinity of the hair-bulbs interferes with their nutrition. It is not at all unusual for a patient to lose his hair completely, including his eyebrows and whiskers; but this baldness is not permanent, since on proper treatment, directed to the removal of this superfluous cell material, the hair is renewed. We find that any or all of the foregoing lesions of syphilis may be absent, and the patient yet go through a disease which shall be recognized as syphilis. In other words, this disease varies in its intensity as much as any other, and, except the enlargement of the lymphatic glands, none of the conditions which you see in this patient are necessarily essential to the progress of syphilis. This is a very marked case, one in which we find present more than the usual number of characteristic lesions or manifestations.

LESSON X.

The Treatment of Syphilis in the Acute Stage—Not Addressed to a Vague and Conventional Diathesis, but to the Removal of the Material shown to be Creating Disturbance—All Lesions of Active Syphilis the Result of Local Crowding of Cells at Various Affected Points—The Difficulty to be Remedied a Mechanical One—Inquiries as to the Best Method of Removing the Superfluous Cell Material—Fatty Metamorphosis Alone Capable of Effecting this—Different Methods of Producing Fatty Degeneration and Elimination—Mercury Proven to be the most Potent Agent—Reasons for Using it in Small Doses Long Continued—Directions in Regard to the Use of Mercury in its Various Forms—Internal Administration—External Use—Diet in Syphilis—Effects of Rum and Tobacco in Retarding the Cure of Syphilis—Prof. Willard Parker's Advice.

The treatment of this, as well as all cases of syphilis during the acute stage, will be addressed to the removal of the material which is causing the trouble. That is, to the superfluous cell growth or accumulation. The same material that we find in the initial lesion, and the same as that which we find embarrassing and enlarging the gland structure. The same as in the papule. The same as in the mucous patch. The same as in the papules which form the scabs which occur in the hair. These lesions are all brought about and kept up by one and a single condition, namely, that resulting from an abnormal local proliferation and accumulation of germinal cells. This fact has been substantiated by repeated microscopical examinations of all lesions of acute syphilis. Consequently, the cause of all the several conditions or lesions of active syphilis being the same,—that is to say, an accumulation of this embarrassing cell material,—the treatment is simple, and the same for all, having simply for its object the removal of such material.

The question as to how this shall best be effected leads us to consider first, the nature of the material we desire to be rid of. This has been proven beyond a question to consist of human germinal cells, in no known respect different from normal germinal cells, except that

they are the product of a proliferation more rapid than that process under normal conditions. Microscopically they cannot be distinguished from the cells which are proliferated and accumulated to repair loss of normal tissue brought about by ordinary causes. Secondly, What are the means and processes by which healthy cell-material, exuded in excess of the necessities of growth and repair, is removed? The answer is simply that, the necessary process, is a *fatty metamorphosis*. Through this, alone, any living material, normal or abnormal, must pass before it can be eliminated from the living organism. The means by which it may be effected are various: 1st, pressure; 2d, innutrition; 3d, various external agents and internal remedies, which by experiment have been found efficient in producing or hastening fatty degeneration or metamorphosis of tissue.

First, in regard to pressure: The effect of pressure in producing this result, is recognized in its known influence, as a surgical measure, in reducing and dispersing abnormal growths. This is also recognized in its tendency to spontaneous disappearance, after a time, without treatment, of the cell-accumulations of syphilis. The tendency of all syphilitic lesions is toward recovery. The necessary pressure exerted upon any local cell accumulation in the tissues would tend toward its removal by fatty degeneration.

Second, in regard to innutrition. Withholding of necessary food produces fatty degeneration of the tissues. The starvation cure was at one time, especially in Germany, in great repute as a cure for syphilis. The sweating cure. The long popular and much vaunted cure by cathartics, diuretics, etc., through profuse drinking of decoctions of sarsaparilla, senna, and different woods, can now be recognized as influential through their capacity to hasten fatty metamorphosis. But the remedy of greatest acknowledged value, in the treatment and cure of syphilis, for the past two hundred years, and up to the present day, is *mercury*, and this, it is well known, is also the most efficient agent in producing fatty metamorphosis of living material. Healthy persons quickly emaciate, all kinds of tissues break

down, under its continuous excessive use. In the salivation it then produces, the characteristic foetid odor has been found due to the decomposed fat which results from the fatty degeneration it causes. In point of fact, every remedy which has ever had a substantial reputation, as of value in the treatment of syphilis, will be recognized, *à priori*, as one of greater or less power in inducing fatty metamorphosis. If then we find in syphilis, as the characteristic and essential factor of every lesion, an accumulation of superfluous cell material, sufficient in degree to embarrass the functions of the vessels or tissues implicated, we have good reason to introduce the remedy which, *par excellence*, is known to be potent in removing it, namely, *mercury*. And if we consider that this remedy is also in highest repute from a clinical standpoint, we are warranted to proceed in its administration with the expectation of the best possible results. The manner of its use, the size of the dose, its frequency, and time of continuance only remain to be settled. Clinical experience in the administration of mercury has taught the fact, now accepted by all recent recognized authorities in matters syphilitic, that small doses of mercury continued for a very long period, say from one to three years, constitute the best treatment for the most efficient and permanent eradication of syphilis from the system of a person afflicted with that disease. This applies to any and every form and manifestation of it during the acute stage, which stage may be said to cover a period varying in different cases from one to three, possibly four, years. The hastily generated cell material which has been described as the essential element in the production of the different manifestations of syphilis, lacks the healthful vitality to enter effectively into the composition of normal tissues. It is present only as obstructive material, and from its presence as such is already subject to the mechanical influences which tend toward its dissolution. It may then be accepted as more readily affected by remedial measures calculated to induce fatty metamorphosis of living material, than such material generated and developed under normal conditions. Hence a smaller amount of mercury,

for instance, would be necessary to effect its removal from the affected organism than would be required to produce a like effect on healthy tissues. Such an amount then as would cause the speediest removal of the imperfect or syphilitic material, without damaging the healthy constituents of the body, would constitute the highest ideal of an antisyphilitic treatment. Hence we can accept from an intelligent and philosophical standpoint the position which has heretofore been only taken from a clinical or empirical view of the matter, viz., *That small doses of mercury, long continued, constitute the most effective and judicious mode of treatment of syphilis during its active stage.*

Beginning then with small doses, of whatever preparation of mercury we decide to administer, in a given case, we increase the amount until we find the constitution of the patient being affected, evidenced by the presence of softness of the gums, or a little red line about them. When that occurs, we know we are getting to a point of affecting the healthy structures of the body, and then the dose is reduced until just that point is reached at which the patient can be carried through without any disturbance of the alimentary canal or of the salivary apparatus. In the case of this patient, then, we should commence by giving small doses of mercury, gradually increasing the quantity until the point of tolerance is reached, and keep it there. Any of the preparations of mercury may be given. We will begin, say, with the protoiodide, a quarter of a grain, three times a day for two or three days; or lest the patient should, as is the case with some, be peculiarly sensitive to the influence of mercury, we may begin by giving only two pills a day for two or three days, and then add a pill at a time as long as he shows no evidence of disturbance from it, and, when the highest point of tolerance is reached, continue the dose. Sometimes blue mass with iron is used, pills containing two grains of the mass. hydrarg. with one grain of the exsiccated sulphate of iron—two to four daily until the desired impression is produced, and continuing usually about three per day throughout the desired period. In all these cases I may remark

that iron is indicated because the health is usually more or less below par. Therefore, when giving the protoiodide of mercury, I am also in the habit of giving the dialyzed iron, in doses of ten or fifteen drops, three times a day. The biniodide of mercury may be given in doses of a sixteenth of a grain, or any other of the preparations of mercury may be administered in suitable doses, the object being simply to get the gradual and positive effects of the drug. It may be administered by external means, using a small quantity of mild mercurial ointment, say the size of a filbert, rubbing it in under one knee one night, under the other knee the next morning, under the axilla the next night, and so on, using it night and morning. There have been those advocating the hypodermic use of a solution of the bichloride of mercury, but this is a method of administering it which, while I have used it, I do so no longer, and do not recommend it, finding other quite as efficient and more agreeable ways of introducing mercury into the system. Mercurial baths or fumigations may also be used for the same purpose.

Whatever be the form of mercurial you decide upon employing, your treatment should be conducted according to the principles I have mentioned for all the lesions or manifestations of the acute stage of the disease. Whether it be of the skin, of the mucous membrane, or whether it be a syphilitic iritis, an inflammation of the iris (which is caused really by a papule occurring at that point, that is, an accumulation or aggregation of cells). All these conditions or manifestations of syphilis, I repeat, respond to this systematic method of mercurial treatment better than to any other. The open lesions during the acute stage of syphilis, chiefly on mucous membrane, the mucous papules, patches, and tubercles, before alluded to, in addition to constitutional measures, require prompt local treatment, especially on account of the contagious property of their secretion. Daily applications of a strong solution of nitrate of silver—forty to sixty grains to the ounce of water—or a light brushing over with the solid arg. nit. will be found most efficacious in hastening their

disappearance. This also applies to ulcerations of the tonsils, which sometimes occur during this stage.

When papules are so situated as to cause annoyance by their unsightliness, as on the face or hands, ung. hyd. nit. or ung. hyd. præcip. alb. with an equal quantity of cosmoline, or a ten per cent solution of oleate of mercury with equal part of cosmoline may be used as a daily local application with advantage. In the latter case a few drops of one of the essential oils will render it more agreeable. The diet of the patient should be simple, excluding acids, spices, and highly spiced food. Tobacco is particularly injurious during the course of this disease, from the fact that both smoking and chewing are liable to produce irritation of the mucous membrane, and when a mucous patch occurs in the mouth it is a very difficult thing to heal while its contact with tobacco is kept up. It is certainly a very great hardship for persons who are addicted to the use of tobacco to give it up; but it is very important that they should do so for the proper and effectual treatment of this disease. In a very interesting note, received not long since from the venerable Professor Willard Parker, in which he spoke of syphilis, I remember he very quaintly said in regard to it, "Some people believe that syphilis is incurable; that is not my belief. When a patient comes to me with syphilis I say to him, Do you use tobacco or alcoholic spirits? If he says yes, I say to him, You are possessed of three devils—syphilis, rum, and tobacco; if you will exorcise two of them, R. and T., I will take care of and cure the other; but if you will not agree with me to give assistance in this way, I will not undertake your case." I would advise you all to make a note of this and remember Dr. Parker's advice. I can assure you it fully coincides with my own opinion, particularly in regard to the "rum;" and in regard to the "tobacco" also, when the mucous membrane of the mouth and throat is affected or predisposed to trouble.

LESSON XI.

- Case I. Clinical Case Illustrative of the Initial Lesion Occurring without Ulceration—Points of Value in Diagnosis of the same—Treatment. Subsequent History—Demonstration of Cure through Birth of Healthy Children—No Evidence of Syphilis in Twenty-nine Years.
- Case II. *Initial Lesion of Syphilis without Induration*, and without Loss of Tissue “Parchment” Variety—Any Degree of Induration may Present—Baumler’s Views.
- Case III. *Saucer-shaped, Non-Suppurating Initial Lesion, with Indurated Base and Edge*—Description—Concomitants—Treatment—Subsequent History—Marriage—No Subsequent Trouble in Fifteen Years.
- Case IV. Initial Lesion of Meatus Urinarius Symptoms—Complicated with Apparent Chancroids—Their Occurrence found due to Inflamed Initial Lesion—Diagnostic Points—Treatment—Secondary Lesions—Initial Lesions Aggravated by Local Irritants—Sexual Indulgence—Alcoholic Stimuli.

CLINICAL CASES FROM MY NOTE-BOOKS, ILLUSTRATIVE OF THE VARIOUS FORMS WHICH THE INITIAL LESION MAY PRESENT IN CONSTITUTIONAL SYPHILIS, AND OF THE VARIOUS LESIONS ASSOCIATED WITH AND FOLLOWING THE SAME:

Case I. *Induration without ulceration*.—M. W.; æt. 29; merchant. June, 1854. History: Never had any previous venereal trouble. Illicit connections with various females, at intervals of a week or two, for many years; no suspicion of disease especially attaching to any. Noticed a little abrasion or chafe on the loose tissue of the prepuce, near the fossæ glandis, in the median line, which healed in a day or two under the application of a little Goulard lotion. Some three months after, during which he had no renewed exposure or any suspicion of trouble, he noticed a small hard painless swelling on the site of the former abrasion, and some sense of fulness in the groins, which attracted his attention, when he recognized several little bunches, not before observed. Was under the impression that these might be due to strain from over exercise, and called to inquire if they needed any attention.

Examination revealed a hard kernel in the cellular tissue of the prepuce at the point before noted, movable and not sensitive. Lymphatic glands of both inguinal regions distinctly enlarged, some size of a small bean; not tender. Tissues of pharynx and soft palate deeply congested. Glands along the posterior border of the sterno-cleido-mastoid muscle enlarged; not tender.

The points of value in arriving at a diagnosis were as follows:

1st. A history of fracture of the skin or semi-mucous membrane resulting from a suspicious venereal connection.

2d. Subsequent induration at that point.

3d. Recent painless enlargement of the inguinal glands, or those nearest to the suspected point of inoculation.

4th. Similar enlargement of glands at a distance, as the cervical.

5th. Congestion of faucial region.

Careful examination failed to discover any eruption on the skin or mucous membrane. Not the least pain or impairment of general health appreciated by the patient.

Diagnosis.—SYPHILIS in the so-called secondary stage. Allowing twenty-one days as the usual or average interval from inoculation to induration and enlargement of inguinal glands, and forty or fifty days before the subsequent general gland enlargements, it carried the initiation of the disease back at least two months, which, taking into consideration that the induration was quite as large as a small pea when accidentally discovered, warrants the conclusion that the inoculation of syphilis occurred at the date of the abrasion one month previous, or three months from the time of its discovery.

The patient was put on a mild mercurial course and kept under its influence, as indicated by occasional tenderness of the gums (when it was alternated with iodide of potassium), for fully two years. The congestion of the pharynx continued with but slight change for several months, when a sharply cut and painful ulceration occurred in both tonsils. This was treated by occa-

sional applications of the strong nitric acid and solid nitrate of silver subsequently. The throat continued congested for several months longer; no other ulceration or eruptive lesion at any point. The induration occurring on the site of inoculation did not disappear entirely for over a year. At the end of the second year the gland enlargements were scarcely perceptible, and the treatment was discontinued, the patient remaining free from any sign of disease for one year after. Then he married. Subsequently four children were born to him. At this date, September, 1882, twenty-nine years have elapsed. Patient and family all living and well. Eldest son, 28; next, 26; next, 20; daughter, 10: no one of them having in the interval had any recognized manifestation of syphilis; on the contrary, have all been exceptionally healthy and robust.

Remarks.—Evidences of localized cell accumulation progressing gradually in the line of the lymphatic channels, from the point of inoculation, to the glands in the groin, then at a distance, finally involving the tonsils to such a degree as to interfere with the processes of nutrition and production of a sloughy ulceration, show that the case was unquestionably one of syphilis. It is shown, by this case, that syphilis may be characteristic *without ulceration* or recognized general eruption, and it will be found in following the history of other cases that the ulceration of the tonsils, which in this instance was valuable in a diagnostic point of view, is more usually absent, and hence is not an essential but an accident, without which the foregoing case would have been free from all ulcerative lesions. This case forms a link in the chain of evidence which goes to prove that syphilis is curable, that the contagious element of the disease is limited in its duration, and that in this instance the limit did not exceed three years.

Case II. *Initial lesion without characteristic induration, and without loss of tissue.*—Papular eruption. M. L.; 22; printer. Occasional venereal exposures: presented with a well-marked papular eruption on the forehead, also sparsely scattered over the body, arms, and legs; denied ever having any sore. Inguinal glands en-

larged and painless; in cervical region the same. Epitrochlear gland of left arm as large as a marrowfat pea. A brownish spot, size of half-dime, was observed on the body of the penis, covered with fine bran-like scales. Patient first noticed this about two months previously as "a little spot of scurf" about one half its present dimensions; thought it was of no consequence. Integument occupied by the spot slightly but distinctly stiffened, giving an excellent example of what is termed by authors the *parchment induration*, and characteristic of a somewhat rare form of the initial lesion of syphilis. Patient's general health unimpaired, but had of late suffered with headache in the evenings, chiefly keeping him awake during the early part of the night, and passing off without treatment. Diagnosis syphilis. Initial lesion of parchment variety. Treatment: \mathcal{R} pil. duplex (2 grs. mass. hydrarg. and 1 ferri sulph.); one after meals.

Under this treatment the cephalalgia disappeared in the course of a couple of weeks. The eruption on the body gradually lost its papular character, leaving a coffee stain, which at the end of six months was just visible; glands less in size, but still prominent. Initial lesion free from induration and scales, but still of tawny color distinctly marking its site. Very slight redness at border of gums. On several occasions there had been slight sponginess and tenderness, then pills by direction, had been suspended for a few days and again resumed as the tenderness disappeared; otherwise the medicine had not produced any sensible disturbing effect. Bowels regular; appetite good; general health perfect.

Remarks.—Baumler, in speaking of this variety of the initial lesion of syphilis, says, "From these cartilaginous indurations" (associated with and characteristic of the ordinary initial lesion of syphilis) "to the flat paper-like thickening of the mucous membrane, where increased resistance is perceptible only in feeling of it sideways, all imaginable intermediate stages occur; the one thing common to them all, being a dense cellular infiltration of the tissue of the cutis or mucous membrane." *

* Ziemssen, Am. Ed., vol. iii. p. 112.

Case III. *Saucer-shaped, non-suppurating initial lesion, with indurated base and edge.*—H. G. A.; commercial traveller; aged 31. Nov. 15, 1867. Suspicious connection about two months previously; none before for several months; none subsequently. Thinks that it was about four weeks after when he accidentally discovered a little “chafe” on the left side of the penis just behind the glans. This he treated with simple water dressings for a few days, when he saw a physician who pronounced it syphilitic. Cauterized it; gave him a lotion to apply on a little lint, and ordered pills to be taken for several weeks.

Under this treatment the “chafe” had gradually increased in size, and presented the following conditions: An ulcer-like lesion about the size of a half-dime; edges slightly elevated, rounded, sloping, forming a saucer-shaped concavity; the floor slightly granular; very red and clean, and exuding a little transparent secretion, which under the microscope was found to contain only large epithelial scales. To the touch the edge and base of lesion was hard and elastic, and movable on the underlying cellular tissue. It represented the typical unirritated initial lesion of syphilis often known as the *Hunterian chancre*. The lymphatic glands in either groin were enlarged, painless on pressure; several the size of a small bean; no gland enlargements in the cervical region; no trace of any eruption on the body; throat not congested; general health good.

Diagnosis.—Syphilis in the primary or *initiative* stage.

Treatment.—Pil. duplex thrice daily; local application of lotio nig.

Subsequent History.—During the following month the patient had a well-marked roseolous eruption, which passed off within a few days without in any way affecting his general health. A group of lymphatic glands became enlarged on each side of the neck; the mucous membrane of the throat became deeply congested and somewhat sensitive.

Under the treatment above noted, the local lesion gradually healed and the induration slowly diminished, but did not disappear entirely for nearly six months,

and then left a slightly juicy-looking swelling in its place, which could be distinguished for fully as much longer.

The mercurial treatment as above noted was continued steadily for a full year, the only omission being during a few days on three or four occasions, when increasing to four pills per day the gums became tender; otherwise there was no trouble of any sort referable to the medicine or the disease. Glands still distinctly enlarged. During the second year a combination of mercury with the iodide of potassium was given (hyd. biniodid. $\frac{1}{16}$ gr.; potass. iodid. grs. viii.; *Mistura biniodid. hydrarg.*), a teaspoonful three times daily after meals. At the end of this year, during which the patient's health had been excellent, the gland enlargements in the inguinal and cervical regions had entirely disappeared; there was not the slightest trace of syphilitic trouble at any point, and the patient was discharged cured. Married two years subsequently; two children, fourteen and seven years. August, 1882; no trouble to which any syphilitic suspicion could attach during this interval of nearly fifteen years.

Case IV. *Initial lesion of the meatus urinarius.*—H. R. Inflamed or suppurating chancre. After a series of impure connections a smarting on urination was observed, and on examination by a physician slight oozing of mucus from the urethral orifice. Was treated by injections under the belief that he had contracted a gonorrhœa. Matters continued about the same for a few days, when the discharge became tinged with blood. This led to an examination, which revealed a small point of ulceration just within the meatus urinarius. On the supposition that the trouble was chancroid, the ulcer was touched repeatedly with nitric acid and subsequently treated by introduction of iodoform. After a persistent trial of this plan for about three weeks, the difficulty not only did not improve, but the part became very tender and swollen and the discharge profuse and purulent, and urination very difficult. Several small ulcers at length appeared on the inner surface of the elongated prepuce. This was the condition of things

when the patient presented himself for change of treatment.

Attention was at once attracted to the dense induration of the tissues about the meatus, also to the presence of well-marked enlargement of inguinal glands on both sides.

The glands and prepuce were swollen and intensely red. An ulceration of ragged character occupied fully two thirds of the meatus inferiorly, and extended about one third of an inch, as determined by the introduction of a small meatoscope (Otis's). Three small sharply cut ulcers, the largest size of a split pea, occupied the preputial opening—apparently chancroids. These had occurred over a month from the date of any venereal exposure, and more than three weeks from the discovery of the urethral trouble. This was opposed to the supposition that the original lesion was a chancroid. When, however, the well-established fact that the initial lesion of syphilis, under prolonged irritation, becomes suppurative, and the resulting pus has the contagious and destructive qualities of pus from a true chancroid, the explanation of the occurrence of apparent chancroids, a month after exposure was easy. This was also a suggestion as to the true character of the original lesion, and was confirmed by the *recent painless* gland enlargements in each groin, as well as by the characteristic induration associated with the urethral ulcer. The patient was required to keep the recumbent position for a few days, and apply a lead and opium lotion to aid in reducing the inflammatory complication. Iodoform applied to the pseudo-chancroids and to the initial lesion, and the patient was promptly put upon a mercurial course (pil. duplex, one thrice daily). Under this treatment the ulcerations external to the urethral orifice healed within a few days, but the urethral obstruction, caused by the swelling and induration was so increased, that sloughing of the urethra threatened, when the meatus was freely divided through the densely indurated tissues. Immediate amelioration of pain and inflammation resulted. From this time the recovery from the local troubles progressed rapidly, and

gave but little further annoyance, although the induration remained. In another fortnight the patient called to say that his gums were a little tender, and also that he had had some diarrhœa for a few days. Evidently the mercurial was in excess, and he was directed to discontinue until these troubles had passed away. Examination of his body at this time revealed a well-marked roseola, the spots of which, from the size of a half-dime to one third that size, were distinct on the breast, back, and arms. Several also on the soles of the feet, and also on the palms, but none on the face, or back of hands. This was a complete surprise to the patient, although he had been instructed to look out for it, and he was confident that it had not been present more than twenty-four hours, and, except for the diarrhœa, expressed himself as having felt perfectly well. Enlargement of glands in the cervical and epitrochlean regions was now distinct.

Nothing further of moment occurred for the following weeks, and the patient was in fair condition, taking three pil. duplex daily; when at about the middle of the third month (from the discovery of his trouble) he began to complain of headache at night, keeping him awake until nearly morning, then passing off and returning on the following night, and he complained of a general *malaise*, and this without any recognized excess or error in diet. A small superficial ulceration was discovered on the right side of the tongue, and another about the size of a three-cent piece on the right anterior pillar of the fauces. Some few scabs were also discovered on the scalp. On again examining his body the faint coppery stains of the roseola were seen here and there over the body, and in addition to this a few red elevated papules, not more than a dozen in number, were discovered scattered over the body; none on the face, hands, or feet.

Pills continued. The superficial ulcerations (mucous patches) in the mouth were daily touched with a forty-gr. sol. of nit. arg. In a week the patient was in his usual condition; the papules passed off in about a month, leaving some slight yellowish stains. No recur-

rence of mucous patches. Continued the pills up to date of departure from town, July 1, 1882, at which date he had been under treatment for twelve full months, and at the time had no trace of induration about the site of the initial lesion, no trace of the eruptions, nothing left to indicate his syphilitic trouble, except the still easily recognized, though greatly decreased gland enlargements in the groin, in the cervical and right epitrochlean regions. That in the left epitrochlean space at time of discovery about the size of a pea had quite disappeared. Ordered mist. biniodid. for at least six months, and then to report for further orders.

Remarks.—The result of persistent irritation of a simple initial lesion of syphilis is well shown in the foregoing case. Also the fact that sores simulating true chancroids may arise simply from contact with the pus from an initial lesion of syphilis, the normal secretion from the latter being only composed of serum and the débris of epithelial material.

It will be observed that, in this case, the appearance of the roseola was not preceded by any peculiar sensation on the part of the patient, while that of the later papular eruption was associated with characteristic preliminary disturbance. This, however, is in all probability due to the gradual obstruction of lymphatic glands throughout the system, and not to any special influence of the papular eruption; for it will be observed that here, as in similar cases, the appearance of the eruption did not relieve the malaise of the patient, as is the case under similar circumstances in the eruptive fevers. It will be observed that this case varies from the preceding ones in that the characteristic eruptions of the active stage were present. As we proceed it will appear that no two cases are quite similar in regard to the variety or degree of concomitant manifestations; but it will also be found that in all cases the lymphatic gland enlargements play a prominent part, and that, as their presence is the most important and significant evidence of the presence of syphilis, their gradual and finally, their complete disappearance, is the surest evi-

dence of the complete disappearance and virtual cure of syphilis. Finally, it may be stated in regard to the inflammatory complication, present in the foregoing case, that this is likely to occur in any initial lesion of syphilis from the persistent application of irritants, such as nitrate of silver, sulph. copper, etc., or from friction by the clothing. Its occurrence is favored by the scrofulous diathesis, by sexual excitement, and by irregular living and alcoholic stimuli.

LESSON XII.

Clinical case—Phagedenic form of the Initial Lesion and its physical peculiarities—Treatment by mercurials—Rapid healing under their influence—Phagedena of Chancroid influenced unfavorably by mercurials—Subsequent history, showing results of insufficient treatment in early stage—Early, steady and prolonged treatment the only trustworthy means of preventing later lesions of the disease—Inability to bear the mercurial treatment very rare—Cures, in properly treated cases, estimated at 95 per cent.

Case V. *Gangrenous initial lesion, or so-called phagedenic chancre, followed by mucous patches; death by cerebral softening.*—L. K., drug clerk, aged 21; of scrofulous diathesis and dissipated habit; presented with an inflamed ulcer about as large as a three-cent piece, shaped somewhat like the figure 8, partly on the glans penis (left side), and encroaching upon the fossæ glandis, and situated upon a densely indurated base. The floor of the ulcer, which was apparently about a line in depth, was of a yellowish gray color, of a shreddy appearance, exhaling the peculiar sickening odor of gangrenous tissue. Glands of either groin enlarged and hard; no other signs of disease. He gave a history of great sexual and alcoholic excess prolonged over several weeks; the discovery of a sore on his glans penis about a fortnight previous, and daily touchings with blue stone, on his own responsibility. He fancied he was getting better when he went off on a spree of several days' duration, having occasional sexual connections in the time. For the last two days there had been considerable pain, and he had been applying iodoform in powder. The induration, which was very dense, extended about two or three lines from the edge of the ulcer, where it met quite abruptly the swollen tissue surrounding it. Diagnosis: gangrenous initial lesion of syphilis. The fact that simple sores and also chancroids become indurated by applications of caustics, and even of simple astringents in some cases, was borne in mind; but the

recent well-marked and painless gland enlargements in the inguinal regions were, when taken in connection with the history and condition of the lesion, considered sufficient proof of its syphilitic origin to warrant the test by a mercurial course. The patient was sent to bed, powdered charcoal poultice, sprinkled with iodoform as disinfectant and sedative, and calomel in $\frac{1}{12}$ -gr. doses was administered every hour during the day, not continuing it through the night; and when $1\frac{1}{2}$ grains had been taken the patient's gums were distinctly tender and the medicine was omitted. The slough extended until the entire induration was destroyed, it was removed, within a few days, and showed a healthy granulating surface. The mercurial was continued in the form of the proto-iodid, hyd. in pills of half a grain each, and healing took place in about a month, leaving scarcely a trace of induration, but a soft, juicy-looking swelling, about the size of the original lesion, in its place. Some swelling and tenderness of the submaxillary glands occurring, the mercurial was entirely omitted, and the patient put upon cod-liver oil and iron. Not seen again for nearly six months, when he reported with mucous patches on the soft palate and gland enlargements in cervical region well marked. Again put on the mercurial treatment, and this time by nightly rubbing in $\frac{1}{2}$ dram of ung. hydrarg. mixt. under the arms and knees alternately. The mucous patches were touched with the solid arg. nit. After about a fortnight the patches being quite healed, the gums scarcely, if at all, affected, the right submaxillary gland began to inflame, and in spite of local applications, of immediate cessation of the mercurial, and the administration of iodine and cod-liver oil, it went steadily on to suppuration. The patient here passed from observation. Some three years after he was reported as having several epileptic seizures, finally dying of cerebral ramolissement.

Remarks.—The early prominent feature in this case is the gangrene occurring in the initial lesion. Auspitz,*

* Anatomie d. Syph.: Initial Sklerose. Von Prof. H. Auspitz u. Dr. Paul Unna. Vierteljahrsschrift f. Derm. u. Syph, (1876), s. 161.

Unna,* Beisiadecki,† Verson, Kaposi, and others have shown that the induration of the initial lesion is dependent upon a dense infiltration of cells and development of fibrous tissue which interferes more or less with the vessels of nutrition. Complete obstruction occurring in certain cases, gangrene results as in the foregoing case, and is essentially different from the molecular gangrene of chancroid, which is the result of the destructive nature of the lesion *per se*. Hence the treatment by mercurials, which tends to produce fatty metamorphosis of the obstructive material in the initial lesion of syphilis, and thus relieve the cause of necrosis, is indicated; while in gangrene or phagedenia occurring in the chancroid the mercurial influence would tend to hasten the destructive action.

The fact that the slough was confined to the indurated mass, and that healing went rapidly on under the mercurial treatment, is in confirmation of the foregoing view.

The inability to bear a mercurial treatment may reasonably be attributed to the scrofulous diathesis, and this aggravated by every sort of dissipation and imprudence. The father of this patient died of chronic phthisis, and this patient had had swellings of cervical glands *without suppuration* some years previous. The occurrence of epilepsy, and subsequent death from brain disease, (which was designated cerebral softening,) in a young man of twenty-four years, can safely be considered a legitimate sequel of syphilis. It is reasonable to believe that, had the patient been able to bear a prolonged and systematic course of treatment by mercurials, he would have, in all probability, escaped the trouble which caused the fatal issue.

In the recent work of Hill and Cooper, of London (1881), prominent English authorities, the following statement occurs: "There is also good foundation for

* Zur Anatomie der Syphil.: Initial Sklerose. Vierteljahrsschrift f. Derm. u. Syph. (1878), s. 531.

† Archives of Acad. Sciences, 1867. (Otis's Physiology, Pathology, and Treatment of Syphilis. New York: Putnam. 1881.) Vienna, 1873. Vol. i. p. 2.

the belief that steady, prolonged mercurial treatment, although not an infallible means, is the only trustworthy one for preventing a return of the disease."

Bumstead and Taylor, in their late work* (New York, 1879), go so far as to say that "we know that the great majority of cases (estimated as high as 95 per cent) which have been thoroughly treated are absolutely cured, and are never followed by a relapse." It is not, then, easy to estimate the gravity of the misfortune to one who, having acquired syphilis, is unable to bear a systematic mercurial treatment. With judicious management such cases are fortunately rare.

* Fourth Ed., 1879, p. 810.

LESSON XIII.

Clinical case—Initial Lesion complicated with Herpes and Phimosis—Difficulties in diagnosis—Treatment—Contagious character of secretions from all fractures of skin or mucous membrane during active stage of Syphilis—Falling of hair due to cell accumulations about hair bulbs—Polymorphous character of Syphilis in some cases—Absence of characteristic lesions in others.

CASE VI.—*Initial lesion, occurring upon herpes and complicated with phimosis. Followed by roscola, mucous patches, and alopecia.*—H. T., merchant, 34, had suffered on frequent occasions during several years with herpes preputialis, the little watery vesicles of which would appear sometimes independently of any venereal exposure, and again would follow such exposure within three or four days. In several instances the vesicles became pustules, and small ulcers were formed; but through the use of the simple lead lotion recovery had always taken place within a few days, except in a single instance, when it was fully a fortnight in healing, and there was said to have been much swelling and hardness. His prepuce was redundant and habitually covered the glans penis, but was readily retracted and was kept scrupulously clean, as he had long previously found that inattention to this favored the production of the herpes. Occasional venereal connections were indulged in, with great care taken to secure immunity from disease. The only person with whom connections had been had, for three months previous, was with one who was thought entirely above suspicion of having any venereal trouble. A fortnight previous, three or four days after last connection, a group of herpetic vesicles appeared. These were on the inner layer of the prepuce, at its attachment near the frenum, on the left side. They were treated as usual with the lead water and disappeared within a few days, with the

exception of two points which pustulated, and finally, when about the size of a small split peppercorn, coalesced. Had much necessary walking to do, and the parts after about ten days became so swollen that the prepuce was retracted only with pain and difficulty. Still certain that the trouble was a simple herpes, aggravated by his exercise and by a rather debilitated general condition from overwork, he sought advice only as to herpes. This was about four weeks subsequent to his last connection.

Condition on presentation, June 10, 1878, as follows: In good general health, but somewhat debilitated from overwork. Penis somewhat turgid and reddened; prepuce redundant, covering glans. Orifice contracted so that the glans could not be exposed. Pressure between the fingers, just at the base of the glans on the left side, showed some slight condensation of the tissues and caused some pain, and oozing of slight mucopurulent fluid. Two inguinal glands about size of a marrowfat pea in left groin. No amount of argument would persuade the patient that his difficulty was likely to prove different from the attacks of herpes with which he was familiar, and he declined, almost indignantly the suggestion that an examination of his paramour should be made in order to aid in determining the exact nature of his difficulty. Absolute rest on the lounge or in bed and injections of weak lead and opium wash to thoroughly lave the preputial cavity was continued for the next two weeks. The attempts to retract the prepuce gave so much pain that it was no longer attempted. Under the rest and sedative treatment the soreness diminished, but an induration, which was appreciated in some degree on first examination, was now increased, and the two glands in the left groin, one above and the other below Poupart's ligament (and which had been strenuously insisted on as the result of strain occurring a long time previous), were evidently increasing in size and were slightly tender on pressure; besides this several smaller glands were now appreciated on the opposite side. With these strong evidences of syphilitic trouble, the patient was finally persuaded to sub-

mit to a mercurial treatment, commencing with pil. proto-iodid. hyd. $\frac{1}{4}$ grain, three times daily, and 15 drops Wyeth's dialyzed iron in a glass of milk, while the same local applications were continued. On the third day pills every six hours. At the end of a week the tenderness of the local lesion was scarcely perceptible, and the swelling less prominent. Glands no longer sensitive on pressure. No effect of the mercurial seen in the mouth, but a slight intestinal irritation causing two or three fluid passages from the bowels, $\frac{1}{8}$ grain of the watery extract of opium was added, and a dram of ung. hyd. mit. ordered to be rubbed alternately into each thigh every night. No further intestinal trouble. The preputial swelling and tenderness decreased so much within the next fortnight that the prepuce was retracted (though with some difficulty), discovering on its inner surface a superficial erosion about as large as a five-cent piece, set in a distinct and characteristic disc of indurated tissue. Slight tenderness of gums appearing, the ointment was suspended, and pills ($\frac{1}{4}$ gr. protoiodid.) reduced to four, omitting the opium, which had caused slight constipation.

July 5th (seven weeks after last connection), the ulcer had quite healed, but the induration remained prominent. The patient called attention to a bright rosy eruption which was distributed profusely over the body, a few spots on the face and palms. Glands in the cervical region distinctly enlarged; size varying from a buckshot to a No. 4; one especially prominent on either side of the *ligamentum nuchae*. Left epitrochlean size of small pea; right, not discoverable. Mercurial well borne; no tenderness of gums, but a slight red line was seen at the border of the gums of several teeth. Has had some soreness of throat. Examination shows right tonsil inflamed and somewhat swollen; fauces deeply congested; patient advised to leave off smoking. Ordered sat. sol. potass. chlorat. to be used as a gargle and habitual wash for the mouth, teaspoonful to a tumbler of water, three or four times a day.

July 30. Has continued the medicine steadily. Roseola faded out in about two weeks leaving scarcely a trace;

soreness of throat also passed off leaving the parts still congested, but free from tenderness; smokes occasionally; does not think it affects his throat; gums not affected.

August 10. Calls, complaining of return of throat trouble; otherwise doing well. Examination shows a small patch of superficial ulceration on the right side of the soft palate, bordered with a narrow gray line; also a small crack in the mucous membrane at the left angle of the mouth. Explain the importance of such lesions: viz., that mucous patches or any cracks in mucous membrane, of whatever character, during the first year of syphilis at least, give rise to a contagious secretion, and when brought in contact with an abrasion in a healthy person, on the lips or elsewhere, will communicate syphilis.

Touch the ulcerations with solid nit. arg. very lightly, just to whiten, and recommend that this be repeated daily until their complete healing. Also as gums are not at all red or tender, increase pills again to four daily and prohibit smoking entirely, as the effect of tobacco always is to aggravate and prolong syphilitic difficulties of the mouth and throat. Patient complains of his hair falling out; wishes to know if this is due also to his disease. State that it certainly is, but that under faithful pursuance of his treatment this as well as the other difficulties will in all probability be but temporary. A stimulating wash was given for the hair.

The subsequent history of this patient presented no salient features. His acute throat trouble passed off in a few days, but the faucial mucous membrane continued congested for many months. The alopecia, which in some cases extends to entire loss of hair, eyebrows, etc., in this instance was never sufficient to attract attention. The induration on the site of the initial lesion gradually became smaller, but was not entirely gone for quite a year from the date of its appearance, although the treatment was kept steadily up, scarcely missing a dose, giving as much as the patient would bear without producing tenderness or redness of the gums, or irritation of the bowels; this was

from three to six pills of the proto-iodide during each twenty-four hours for a little more than a year. At this time all evidences of cell accumulation at the site of the initial lesion had entirely disappeared. The glands in the groins were still slightly enlarged, but those in the cervical and left epitrochlean regions had quite gone. Was very anxious for consent to marry, but advised to a twelve months' course of what is familiarly known as the mixed treatment—Mist. biniodid. hydrarg. containing $\frac{1}{16}$ biniodid. and 8 grs. potass. iodid. thrice daily. This was taken faithfully, and borne without trouble of any sort. Six months after this, he not having seen any evidences of his former trouble for over a year, and as the inguinal glands, although slightly enlarged, were not greater than many who have never had syphilis, consent was given to his marriage—about two years and a half from date of acquirement of the disease. A short time since he called, having been happily married for over two years, to state that he had had not the slightest return of his old trouble, nor had his wife contracted any disease; his only trouble was that, as yet, he had had no children.

Remarks.—The occurrence of an initial lesion on the site of a *herpes preputialis*, as shown in the foregoing case, is not infrequent. On the contrary, there is no more favoring condition for the acquirement of syphilis than a predisposition to herpes. A slightly irritant leucorrhœal discharge is often sufficient to determine an attack, and the bland and unirritating nature of the disease germ of syphilis does not interfere with the natural course of the herpes. It should never be lost sight of that no lesion occurring after an illicit venereal contact can be safely pronounced free from danger of having been the point of entrance of a syphilitic disease germ until after the longest period which has been known to elapse between *inoculation* and the appearance of the *initial lesion*, and this is never less than forty days.

Second point of especial moment is the prompt effect of the mercurial treatment in reducing the tenderness and swelling, not alone of the initial lesion but of the

adjacent glands, adding proof to the position that mercury acts on the newly proliferated syphilitic cell material which distends and disturbs the tissues, inducing a fatty metamorphosis, (through which alone living material can be eliminated from the organism,) and aids also in deciding between opposing authorities, some of whom * claim that mercury should be withheld as a rule until the manifestation of constitutional syphilis appears; while others † claim that the treatment by mercury should be commenced as soon as the initial lesion can be recognized as such. Certainly, if mercury acts in curing syphilis through any property it is known to possess, it is by its power to hasten tissue metamorphosis or fatty degeneration; and if it has this value in the cell accumulations of the so-called secondary manifestations, it cannot be denied in the accumulations constituting the initial lesion, which has been shown by such authorities as Cohn, Beisiadecki, and others, to be virtually identical in composition and nature with them. Hence we are prepared to agree intelligently with those who begin the treatment of syphilis at the earliest moment of its recognition.

The usual tolerance of mercurials, given in doses, and with the frequency sufficient to produce a mild and curative effect, is well shown in the foregoing case.

It will be observed that the papular eruption, which often occurs about the third or fourth month of syphilis, was apparently absent. Its equivalent was, however, recognized, in the *mucous patches* in the mouth, and in the *alopecia*, which is found by microscopic examination to result from accumulation of cells about the hair bulbs, similar to those forming the papule on the skin in other cases. The polymorphous character of syphilis in the acute stage is well seen in this case, but it will be found that no two cases are alike in the number, locality, or degree of development of their manifestations, and that cases may even be met which pass through the different stages of the disease without pre-

* Bumstead and Taylor ("Venereal Diseases." Philadelphia: 1879).

† Hill and Cooper (London: 1881). —

senting a single characteristic lesion of the skin or mucous membrane; the only evidence of syphilis being confined to gland enlargements (often escaping observation), and the subsequent occurrence of well marked sequelæ of syphilis.

LESSON XIV.

Clinical case—Initial Lesion on the lip—Simulating Epithelioma; also the mucous patch—Dark color of papular eruption on a quadroom—Roseola passing off in 48 hours—Malposition of Epitrochlean Gland—Ease with which enlarged glands sometimes escape discovery—Subsequent papular eruption—Occurrence of Iritis due to same cell accumulation as produces the papule—Treatment for all lesions in the active stage of Syphilis the same—New troubles not an evidence of relapse, but incidents *en route*—Treatment of Iritis—Persistence of the papular eruption Characteristics—Recurrence after disappearance, and in same spots formerly occupied—Continued recurrences—Significance of this—Question of marriage a difficult one in such cases—State of papular eruptions significant of changes previously effected in the skin where papules occupy spots of previous eruption, and suggestive of *non-contagious* stage.

CASE VII. *Initial lesion. Mucoid form, simulating a mucous patch. Large papulo-pustular eruption. Iritis—Acquired from woman with mucous patches and a military papular eruption.* A. W., chemist, 38, presented December, 1878, for an opinion as to the nature of a small superficial ulcer just inside the lower lip, near the right labial commissure. Patient had suffered occasionally with "cold sores" about the lips, and thought the trouble of that nature, until a medical friend suggested that it might be a commencing epithelial cancer, the result of excessive smoking, and ought to be shown to a surgeon. Two surgeons had examined the sore, one of whom was confident that it was an epithelioma; the other thought it doubtful, and suggested syphilis, and advised him to get another opinion. The lesion was nearly circular, and about as large as would be covered by the top of an ordinary lead pencil; its surface was slightly elevated, florid, granular, and covered with a grayish pellicle. The tissues on which it was situated were quite hard to the touch, for perhaps a quarter of an inch surrounding. But for this induration it could not have been distinguished from a typical mucous patch. Two slightly

enlarged lymphatic glands lying over the parotid were found; none at any other point. The patient denied ever having had syphilis, or any sexual connection for more than a year, but admitted kissing a female domestic in his family on several occasions. No other evidence of trouble was found. After much argument the gentleman at last consented to send the domestic for examination. She proved to be a very handsome quadroon, very simple, and evidently unaware of having any venereal disease. She admitted that she had had some sore-throat and a profuse leucorrhœa, but denied ever having had sexual intercourse; denied also having had any sores of any sort, except an occasional "canker" in the mouth. Examination revealed an extensive superficial irregular ulceration of the soft palate, bordered with the diphtheric deposit characteristic of the *sypilitic mucous patch*. She had also well-marked gland enlargements in all the usual localities, and a miliary papular eruption over the body. The papules were about the size of a large pin's head, in groups of 6 to 8 or 10, an inch or more apart, and appeared on the light coppery skin of the quadroon as of a deep purple color. At first claiming that she had always had these dark points, she finally confessed that they had appeared only two or three months previous, and also that she had had a single illicit connection some months before, but stoutly denied all knowledge of having had any local disease.

With this positive knowledge of syphilis and the strong circumstantial evidence which it afforded, there was but little room to doubt that the suspected epithelioma of the lip was an initial lesion of syphilis, acquired through contact with a mucous patch; the secretion of which, as well as all the secretions throughout the active stages of syphilis, being well known to possess the contagious property equally with the open initial lesion of syphilis.

Mr. W. was satisfied to commence a systematic mercurial course, as advised. Pil. duplex (hyd. mass. 2 grs.; ferri exsic 1 gr.) was taken steadily for about a month, at the rate of three per day, without any trouble of any

sort, except slight tendency to fluid passages from the bowels, which was readily corrected by a little paregoric. Having been instructed to watch carefully for any eruption, he called within a few days, with a slight mottling of the skin on back and abdomen, so indistinct, however, it was quite uncertain whether this was anything more than the natural spottiness which is not uncommon in cool weather. Gland enlargements in the cervical region were now distinctly made out; none in the inguinal or epitrochlean.

On the following day, by careful inspection, looking across the back, and also the abdomen, against a strong light, a pale eruption, slightly elevated in places, made it quite certain that it was the roseola, initiating the constitutional stage of syphilis. It passed off completely, however, very soon, for 48 hours afterwards it could not be certainly detected at any point.

It is worthy of note here, that another careful examination for an enlarged epitrochlean gland resulted in its discovery fully the size of a marrowfat pea, and situated *at least three inches above the epitrochlean space*, between the borders of the biceps and triceps muscles. The knowledge that such malposition is not very uncommon, and that quite large glands, having sometimes very loose attachments, will slip under the borders of muscle or fasciæ in such a way as to elude any but the most careful and persistent search, may occasionally be serviceable.

During the next few weeks nothing noteworthy, except congestion of the faucial mucous membrane, which at times was quite swollen and sensitive, but temporarily relieved by chlorate of potash gargle, and occasional spraying with a 40-gr. solution of argent. nit. Finally, two or three small superficial ulcers occurred on the tonsils, and at about the same time some redness and pain in the left eye, which had been quite weak for a day or two. Examination showed some conjunctivitis, the iris slightly discolored and duller than the opposite, and on closing and opening the lids quickly, with aid of a thumb on either eye, it was seen that the iris of the left eye was nearly immovable; and, as

if it were not sufficient to have discovered this well-marked example of a mild type of syphilitic iritis, it was also found that a scanty eruption of papules, some as large as silver three-cent piece, had developed on the back, arms and legs; not the least irritation announced their presence; they were rosy in color, slightly elevated, and quite insensitive to touch. The patient was very despondent from this combination of ills until assured that the trouble with the throat, the eye, and the integument, were simply evidences of the same papular eruption, modified by locality; an accumulation of cells which had caused a disturbance by their presence, chiefly mechanical, and which, with the aid of the treatment, would, in all probability, pass off in a short time without leaving any permanent trace. That they were not evidences that the treatment thus far pursued was unsuitable or inefficient; but that, in the necessity of avoiding damage to healthy structures, the process of destroying and eliminating this imperfect cell material, accumulated in the mucous membrane of the throat, in the iris, and in the skin, was a comparatively slow but a sure one. That nothing else was necessary but to go steadily on with the mercurial, in just that amount and frequency as could be borne without damage to the sound material and tissues in which they were imbedded. That these new troubles were not the evidence of a relapse or coming anew under the syphilitic influence, as manifested in the apparently arrested and transient roseola. They were simply *incidents*, adverse currents, or shoals, if you will, on the onward voyage towards recovery; that while many made this voyage with scarcely a ripple of discomfort from beginning to end, others met with varying obstructions and delays; but all eventually passed through, and few comparatively, if well guided to its termination, found themselves much the worse for the experience. The distillation of a couple of drops of a solution of atropine (2 grains to the ounce of distilled water) into the affected eye, had the almost immediate effect of demonstrating that slight adhesions of the iris to the anterior capsule of the lens had taken place,

irregularity in border of the iris becoming visible. This, however, soon gave way under a few repetitions of the atropine, at intervals of three or four hours, which also relieved the pain. The attack proved a very slight one, for no other treatment became necessary; and after continuing the dilatation by atropine for a couple of weeks, and simply avoiding a strong light, all evidences of the trouble had disappeared. The initial lesion and the induration, never extensive, had quite disappeared. The papular eruption remained, and although the mercurial was well borne, and an occasional sense of tenderness of the gums announced the limit of endurance of the remedy. At the end of another month it had not entirely lost its salience, although it had quite lost its reddish color and assumed a deep coppery hue. Occasional papules showed an exfoliation of the epidermis at their base, which condition, resulting from the interference with nutrition through the cell accumulation causing the papule, constitutes a valuable point in diagnosis. With a steady continuance of the treatment, however, the spots gradually disappeared, having continued (from the date of their appearance until they could no longer be detected) fully three months. Nothing then occurred to interrupt the favorable course of the trouble in this case—throat trouble having gradually faded out: the gland enlargements almost gone. After nearly a year, however, the treatment in the period having been faithfully pursued as initiated, small scaling papules appeared. These were flat, slightly thickened spots, rather than papules, about the size of a lead pencil top, with their silvery border of epidermal scales, when discovered, and, had it not been for previous history, could not have been distinguished from spots of simple psoriasis. There had been on each hand only a very few spots of the original papular eruption, say five or six, and had caused the chief discomfort of the patient at one time, as they constituted the only evidence of syphilis to a casual observer. On this account they had received quite a little local treatment by mild mercurial unguents, and with apparent success, as they passed off at least a month before those on the body. The

statement (which the patient made quite confidently) that these spots had returned *in the exact places occupied by the former eruption* was noted. Similar carefully-observed cases which had been met, where a return of such an eruption over three years (in one instance) after the original papular eruption, and in the same places, seemed to indicate that the later eruption might belong rather to the sequelæ of syphilis than to the evidences of the active contagious disease. And the treatment was changed from the simple mercurial to the combination of mercury, with the iodid. of potass. (Mist. biniodid. hydrarg., see page 259.) A few weeks of this treatment, added to ung. hydrarg. nit. and vaseline, equal parts, locally, caused entire disappearance of this, and after three months further treatment with the *misturæ biniodid.* (3 three times a day), it was suspended from accidental causes for nearly a month, when the spots returned, and apparently *on the exact sites of the former spots*. Treatment resumed, with the addition of a fumigation thrice weekly, thirty grains of resublimed calomel, (this preparation, on account of its less irritant property, being preferred), and moderate inspiration of the vapor advised, if it could be borne without producing cough.

Again, within a few weeks, the spots disappeared, and, as the gums became slightly tender, the fumigation was omitted, continuing the "*Misturæ Biniodid.*" alone. The patient then went on living very regularly, and taking his medicine as ordered, and with scrupulous care, as he was under engagement of marriage formed just previous to his inoculation, and desirous of hastening his recovery in every possible way. After six months of this treatment, in order to test his condition, he omitted his medicines and the spots returned in less than a fortnight. This was the only evidence of the syphilitic diathesis now remaining, for the throat had long since ceased to show any unusual engorgement, and the glands in all localities, while still distinguishable, were no longer characteristic. Another six months, making fully two years from the date of his inoculation, and the patient presented very worried, stating that while he

was quite well in every other respect, and had no trouble of any sort when he took his medicine, as soon as he left off treatment, the scaly spots would return on his hands, and *always in the same places*. He was very anxious for some definite time to be set when it would be safe for him to marry. It became necessary to advise this patient that, in the present state of knowledge in regard to such a relapsing eruption following syphilis, it was uncertain whether or not any contagious element was still associated with it; that the active stage of syphilis was one of steady progression, while the sequelæ were prone to relapses. That the repeated recurrence of the scaling spots on the same sites were significant rather of organic change in the vessels of nutrition in the affected integument than of an infecting material free in the blood; but inasmuch as there was not sufficient available experience to decide this point positively it would be necessary for him to postpone his marriage indefinitely, and go on with his treatment until the cessation of it, as tested from time to time, was not followed by a recurrence of the trouble. Then, according to best authorities, he should wait a full year, which, if passed without evidence of syphilitic trouble, he might venture to consider himself well, and marry. This patient is now two and one-half years from the date of inoculation, and has passed nearly three months without treatment or any return of trouble.

Remarks.—The occurrence of the syphilitic initial lesion on the lip is not very rare. In the foregoing case the contagion was undoubtedly direct, but this is the point, more than any other, where the initial lesion may be looked for as a result of mediate contagion, viz., contact as of the lips with any articles which have been in use by persons who have mucous patches on the lips or in the mouth or fauces. Hence, when syphilis is suspected, and the site of the initial lesion in doubt, this region should be examined with great care. The presence of enlarged lymphatic glands in the vicinity is of great value in clearing up a diagnosis, for *these are rarely, if ever, absent* in syphilis beyond the third or fourth week after inoculation, and may often be found at a much

earlier period. (For explanation of manner in which mucoid form of initial lesion is formed see page 108.)

Various modifications of the papular eruption of syphilis will be met, no two cases presenting exactly the same arrangement, locality, or degree of development. The miliary variety where the papules are about the size of a pin's head, sharply acuminate, and often into a little serous accumulation or a scale at the summit, and thickly and irregularly distributed, or in groups (like that described in the female associated in the foregoing case), or arranged in circles or figures of 8. Again, the papules may be large and flat in groups, or thickly and generally distributed, or sparsely (as in the above case of A. W.), but to a certain extent always symmetrical on either side of the median line of the body—a fact which characterizes the early papular eruption as contra-distinguished from that sometimes occurring in groups and unsymmetrically at a later period, as towards the end of the first year of infection, or subsequently. Papules may be associated with pustules; may all be more or less pustular; may even begin apparently as pustules; and thus a great variety of eruptions of a papular or papulo-pustular character may be met in the early period, say from the third to the sixth month after infection. The presence of such eruptions, whether we designate them after authorities by the size or shape of the papules, or according to their real or supposed resemblance to simple diseases of the skin, as the lichenoid, the lenticular, the scaling papular (syph. psoriasis), the annular (syph. lepra), or the acneiform, the variola form, the impetigo form, or the ecthyma form, we must nevertheless bear constantly in mind the fact that one and all, if of syphilitic origin, are the result of the localized accumulation of cell material, hastily generated through the syphilitic influence; taking the different forms through constitutional idiosyncrasies or dyscrasias, and, according to the late microscopic researches of Kohn, Auspitz, Virchow, Neuman, Baumbler, always beginning in a papillæ cutis,* and that

* See Otis on "Physiology, Pathology, and Treatment of Syphilis:" Putnams. 1881. p. 32.

the treatment for all is the same, varied in degree only, to suit the constitutional peculiarities of each case. It is also proper to state that no eruption can be pronounced syphilitic from its *appearance* alone, but that, in order to warrant such opinion, gland enlargements must also be present more or less pronounced in the various localities where the superficial lymphatic glands are located, as in the cervical, inguinal, and epitrochlear regions. It will also be seldom that other evidences are not also present, one or more, such as congestion of the throat, ulceration of tonsils, mucous patches in the mouth, or between the toes, or at the anus. It is then evident that the form, color, size, or locality of an eruption is not the test as to its nature, but it must always be traced to a probable syphilitic origin before it is warrantable to pursue a systematic mercurial course. That, so traced, every variety of eruption of a papular, pustular, or vesicular character, or any combination of these forms occurring between the second and seventh months after a syphilitic inoculation may be said to have its cause in a localized cell accumulation beginning in a papilæ cutis. For the elimination of this, a gentle persistent mercurial treatment is indicated not only as the result of clinical experience, but from the fact that it is "*the remedy, par excellence, for inducing the fatty metamorphosis: through which alone the cell accumulations occurring during the acute stage of syphilis can be removed.*"

Papular eruptions, and their variations, in the early stage are sometimes slow in reaching their full development, varying usually several days and sometimes as many weeks, but there are apparently no relapses, the new accessions appearing always at new points. The so-called relapses coming on soon after the disappearance of the first crop of papules, coming as they usually do in groups, would seem to be due to the setting free of infectious material stored in temporarily obstructed lymphatic glands. In other cases where the eruption recurs at same points (as in present case,) this would seem to be due to changes in the skin from previous damage, and may ultimately have to be classed among

the *sequelæ* rather than among the manifestations of the active period of syphilis, or that in which a contagious element is still present in the blood and in the secretions of all lesions. Further observations on this point will be presented when considering the later periods of the disease.

LESSON XV.

Clinical case—Hunterian Chancre—Treatment by excision—Mode of operation—Ulcerating papular eruption—Mucous patches and papules—Treatment—Unfavorable influence of tobacco and alcohol—Good effect of Syphilis on habits of patient—Treatment well borne—Length of time required to keep it up—Time when immunity from danger of communicating the disease arrives—Length of probationary period before marriage—Causes and conditions which occasion pustulation and ulceration in the papular eruptions of Syphilis.

Case VIII. *Initial lesion. Papulo-pustular eruption, mucous patches, and papules, etc.*—G. M., aged 18; bartender; presented with a characteristic specimen of the so-called Hunterian chancre on the superior aspect of a redundant prepuce. *The open lesion* was fully three-fourths of an inch in length by one-third of an inch in breadth, imbedded in a cartilaginous matrix about a quarter of an inch broader and longer, and moveable on the inner reflexion of the prepuce. This had been several months in coming to these dimensions—not quite certain as to time; appearing first as a slight *chafe* and gradually increasing in size and density under a variety of local applications—caustic and sedative. No internal treatment had been resorted to. Glands in groin and cervical regions enlarged and hard. No history of previous venereal disease. General health not very good, but no particular pain or trouble except, latterly, occasional headaches, sometimes in the day but chiefly at night. Examination shows a large, deep red papular eruption rather thickly scattered on the back and breast chiefly, but on the thighs *pustules* were present about the size of a split pea, scabbed and surrounded by a slight inflammatory areola, while on the legs, especially near the ankles, were several *superficial ulcerations* covered with brown scabs as large as a dime, looking very angry and sensitive. Also several points of superficial ulceration between the toes, the surrounding surface presenting a whitish sodden appear-

ance, the secretions very offensive (mucous patches). Besides these were several moist papules, quite elevated, and open pustules on the scrotum (mucous papules and tubercles, simple and ulcerated). The throat was deeply congested, but neither this nor the mouth presented any localized lesion.

Diagnosis: *Syphilis*, in the fourth or fifth month.

Treatment: As the initial lesion was easily movable on the underlying cellular tissue, its enucleation was decided upon. After the parts had been thoroughly cleansed and bathed with a one to sixty solution of Carbolic acid, the indurated mass was tightly encircled by a small silver wire, and the tissues beneath it transfixed with a sharp pointed bistoury, cutting out first one half and then the other, thus removing the entire mass. Half-a-dozen turns of continuous suture of black thread closed the wound satisfactorily, and a simple wet boric cotton dressing was applied. The mucous patches and tubercles were swept lightly over with the solid *argenti nitras*, and the patient was put on the usual mild mercurial treatment with an extra tonic. Thus, (Mass. Hyd. 2 grs., Ferri Exsic 1 gr., and pil. quin. bisulph. 2 grs.) one of each thrice daily, and in addition, at the same time, a teaspoonful of a solution (made up fresh daily) of the sulphide of calcium (2 grs. to 2 $\frac{3}{4}$ of water). Rest in bed or on a lounge until healing of the wound of operation; simple but nutritious diet. On the third day, when the stitches were removed, healing was found to be complete. Under the local and internal treatment above indicated, touching the mucous patches and papular daily with the arg. nit., this, with the abstinence from tobacco to which the patient was addicted in all forms, resulted in prompt improvement, and in a short time the open lesions had entirely healed and returned to their original papular condition, and the sulphide of calcium was dropped. Through the indifference and want of sense in the patient the continuation of the mercurial and tonic treatment was very irregular, and its effect was, moreover, much depreciated by occasional excesses in alcoholic stimulants and tobacco. While there was no return of ulceration in the papules, an

ulceration involving both tonsils occurred, requiring local treatment (application of acid nit. fort. at first, then solid argent. nit.) for several weeks, and finally healing, leaving the whole pharynx congested, and at times quite sensitive. A saturated watery solution of the chlorate of potassa had been in daily use as a gargle and mouth-wash from the commencement of the mercurial course (as is usual in such cases), and was continued with occasional applications of a strong solution of tannin and glycerine, when the sensitiveness of the gums became manifest. The mercurial treatment was kept up more or less regularly, as originally commenced, for about a year, only twice or thrice resulting in any perceptible effect on the gums. The papular eruption passed off the body, quite losing the salience within two or three months; but on the thighs, wherever a pustulation had occurred, a faint coppery stain was discernible at the year's end, and on the legs, where the ulceration was most marked, the stain was at that time of a deep coppery hue. The throat was no longer habitually congested, but still it was more easily affected by changes of weather than formerly, and the occasional necessity for his gargle was recognized. The general health of patient had not suffered during this long period of medication. He had become steadier in his ways, and had been for some time perfectly regular in his treatment. The gland enlargements at all points were greatly decreased, but still readily discernible. Of the initial lesion there was not a trace. Even the line of union of the cut surfaces was scarcely to be distinguished from the natural creases or wrinkles in this locality, and there was absolutely no more evidence of loss of tissue than if a simple foreign body had been removed. The patient now wishing to change his residence to a distant part of the country, desired specific instructions as to the length of time he still required to continue treatment, and what changes, if any, were to be made.

He was informed that the present treatment, or its equivalent, should be pursued for still another year, always in such degree as not to affect the general health

unfavorably. Alternating it from time to time with the iodide of potassium (5 or 6 grs., three times a day), or taking that drug in combination with it—(Mist. Biniodid. Hydrarg.) He desired still further to inquire as to whether or not he was still capable of communicating the disease through ordinary contact, or otherwise, and, if so, when he would probably be free from such danger.

In response to this he was informed that, although he had no open lesion, the contagious element of the disease was doubtless still in his system, and that the complete disappearance of the material evidences of the disease, which included gland enlargements, at all points, would be necessary before the incapacity to communicate the disease could be reasonably claimed. That this, in a case like his, where early treatment had been neglected, and he had suffered from some of the severer lesions of the disease, *immunity from danger of communicating syphilis could not confidently be expected in less than from two to three years from the date of its acquirement.*

That while lesions of syphilis certainly recognized as containing a contagious element, such as the true mucous patch, papule, or tubercle, were rarely, if ever seen, after the first year, but if the contagious element was still in the system, it might escape through an ordinary abrasion, or wound, or sore, of any description, and, if brought in contact with a fracture of skin or mucous membrane on a healthy person, it would communicate syphilis. Thus sexual contact was not without danger of communicating syphilis in such cases, even when no recognized syphilitic lesion was present at any point.

Again, lastly, he desired to be informed as to whether or not he would, as a conscientious and upright man, be justified in looking forward to marriage within the next five years.

This question, virtually identical with the previous one, yet embracing the assumption of a responsibility which, if assumed prematurely or in error, might inflict irreparable evil on a future wife and offspring, could only be fully answered *after the probationary period of a year subsequent to the cessation of the treatment.*

Provisionally, it might be stated that, after the pursuance of a judicious, thorough, and well-borne mercurial course for at least one and a half to two years, and as long after (up to three years) as necessary to secure the complete disappearance of *all gland enlargements due to syphilis and all other evidences of the activity of the disease* then if, for the full period of one more year, on careful scrutiny no evidence of the disease was manifest, consent to marriage would be justifiable as far as the question of *communication* of syphilis was concerned. But every person who has once suffered from syphilis, no matter in how light or how transient a form, is liable to suffer from trouble in various forms, known as the *Sequelæ of Syphilis*. *The earlier and more thorough the treatment the less the liability to these troubles*. They might be very slight and pass off without recognition even, or be so grave as to threaten life. Such troubles, usually spoken of as Tertiary Syphilitic lesions, constituted a purely personal matter in every case, wholly lacking the contagious element. They are not a necessary part of syphilis, and, when occurring and recognized early, they are eminently amenable to treatment. As before stated, those cases of syphilis early, thoroughly, and wisely treated, during the active period of the disease, escape as the rule. Yet every one once the subject of syphilis should never forget the possibility of such accident, and, whenever suffering from any serious or unusual difficulty, should always communicate the fact to the medical attendant in charge of the case.

Remarks.—The foregoing case presents a good example of the causes and conditions which determine pustulation and ulceration in the papular eruptions of syphilis.

1. The debilitated condition of the patient favoring the suppurative process.

2. The character of his business requiring many hours daily in a standing position, producing additional tendency to congestion in the papules of the lower extremities, and this increasing the suppurative action, resulting in the ulcers about the legs and ankles; papules also becoming mucous patches and ulcers in moist places.

Consideration of the causes which may affect any presenting eruption of syphilis from condition, locality, and business, etc., will suggest judicious modifications in the hygienic as well as the medicinal treatment, and make us hesitate in classifying eruptions of identical origin in a manner tending to obscure the real causes of difference in appearance and amenability to treatment.

LESSON XVI.

Length of time required for complete cure of Syphilis variable : gentle, steady influence of mercury from one and a half to three years—Popular prejudice against mercury not well grounded—Testimony of all authorities in its favor—Destructive lesions of Syphilis belong to the late stage—Treatment not addressed chiefly to the accidents of the active stage, but to the prevention of so-called Tertiary accidents—The Sequelæ of Syphilis—Unwarranted responsibility taken by those who claim safety after a brief period of treatment—Light form of early Syphilis no guarantee against grave late lesions—M. Fournier's views—Prolonged and judicious administration of mercury essential in every case of Syphilis—Exceptions where treatment is not well borne very few—Security against late troubles to be effected in *no other way*.

General remarks.—The length of time usually required for the complete cure of syphilis will vary in different individuals from one and a half to three years, and during all this time the steady, gentle influence of the mercurial in form, dose, and mode of administration as previously stated (page 119) is required until all abnormal cell-accumulations dependent upon the syphilitic influence have disappeared. When after a year and a half to two years *all external evidences of the disease have passed away, and the lymphatic glands can no longer be felt*, or have returned to the condition in which they were found previous to the constitutional stage of the disease, the treatment may be discontinued, but not before, *unless there is some idiosyncrasy in the patient which contra-indicates its use*. If the patients are faithful, sensible, and obedient, in by far the largest majority of cases, they will pass through the trouble easily and happily to a complete cure. A great weight of experience in the plan of treatment which I have indicated (including that of the most distinguished authorities in Europe and America), assures us of the truth of this, and the patients do not suffer from the long-continued treatment in any appreciable way, and that in consequence of it they have the greatest and the *only* security of escape from the so-called tertiary, or late lesions—the sequelæ of syphilis.

I am quite aware that there is a great popular prejudice against the use of mercury in syphilis, and this has arisen in great measure from the abuse of the drug in earlier times, but it has been kept up and intensified by quacks and the ignorant and the unworthy of our profession, who, from causes and motives natural to these classes, refuse to accept the testimony of the learned and experienced authorities, who are now in complete accord in this matter, in every part of the world. Without a show of evidence, or experience, entitled to respect, they deny the necessity of the mercurial treatment, and make the pretence, that syphilis may be as efficiently, and more safely, managed without it. They point to cases thus treated, apparently well of the disease, and claim them, as evidences of the truth of their statements. The very important fact, that syphilis, in its acute period, is a self-limited disease, and will pass away with any sort of treatment, or without treatment, is not made apparent. This is the fact, and while we claim and know, that a judicious mercurial treatment, will hasten the cure of the active lesions and stages of syphilis, it is not on this account, that the treatment is considered *essential*. It is because, more than any other known remedy, it prevents the sequelæ of syphilis—the so-called tertiary and quarternary lesions—which result in destruction of important tissues and organs, vessels and bones. *These accidents do not occur in the early or acute stages of syphilis.* After the apparent disappearance of syphilis, in a few months, or a year or so, there comes a deceitful period of perfect health, perhaps. The disease is perhaps cured; but in two, or three, or ten, or twenty years after, new trouble may arise, no longer contagious, as in the past syphilis, but destructive. It is this, that causes the really important damage. Deformity, disability of body or brain, or both, and, finally, in some cases, death. It is to avoid the danger, present in every case of syphilis, of such results, that the persistent and judicious use of mercury during the acute period of the disease is most important, and is, as we fully believe and know, absolutely essential. We do not urge the administration of mercurials, without a due consideration of the respon-

sibility we take in so doing, without a knowledge of all it has ever done, that is objectionable, or ever may do. It is because, without a systematic, judicious mercurial course, the patient who has once been a subject of syphilis, in no matter how light a form, or how slight or short-lived the manifestation, is in jeopardy every hour, and that nothing but a course of simple mercurial treatment, continued systematically for at least a year, can afford any reliable security. This is the experience of all in our profession who have any title to a respectful hearing, on account of wisdom and experience, and in the present state of our knowledge of this matter it is sufficient to warrant you in insisting upon the necessity of such a course of treatment in every case of syphilis which in the future may present to you for care and treatment.*

Do not understand me to say that every case shall be treated in the same manner, as to the size of the dose or the mode of administration, and without regard to the physical condition and circumstances. A judicious following of the plan insisted on is necessary, *i.e.*, such an amount and such a mode of administration as may be borne without disturbing the digestive apparatus, or materially interfering with the processes of nutrition. As a rule, if the medicine is judiciously administered, the patient will not only not be disturbed, but he will improve in both these respects. How much a more regular and exemplary mode of life, which a proper management of syphilis necessitates, has to do with the improved condition, I am not able exactly to state, but it is nevertheless a fact, that most young men are in

* The distinguished French syphilographer, M. Fournier, says on this point: "Experience teaches us that syphilis, originally mild, may reveal itself sooner or later in serious symptoms, if it has not been submitted, like the more malignant forms, to a prolonged and severe treatment. One has seen, more than once, syphilis of this kind, negligently treated by reason of its apparent benignity, become, later, singularly dangerous in marriage in the double possibility of contagion and heredity. . . . It is to-day proved, that the initial benignity of syphilis does not constitute in any degree an absolute guarantee for the future. Such syphilis which begins well, is not, for that reason, unexposed to a bad end." ("Syphilis and Marriage," by M. Alfred Fournier. London Ed. 1881, pp. 111, 112.)

better health, after a judicious course of specific treatment for syphilis, than before its acquirement.

I do not wish to be understood that no other medicines are necessary, or advisable, in any case of active syphilis. There are idiosyncrasies that must be respected—cases that will not bear the ordinary amount of mercurial without trouble of some sort. These are fortunately rare; but when they present, you must use your ingenuity, so to select the particular form, and combine your most excellent remedy, that it may be borne. You may alternate it with the iodide of potassium, which is also an agent of much value in bringing about fatty degeneration of living tissue, or you may, if you can do better, rely upon this drug in combination with other means and measures which are known to favor fatty degeneration and elimination.

You are likely to meet with cases that will try your temper and courage: that will call into fullest requisition all your knowledge and your experience and your judgment, and, not least, all your common sense, and yet fail to obtain such a toleration of the mercurial as will enable you to prevent the occurrence of the sequelæ of syphilis. These cases will, however, I am glad to say to you, be rare exceptions, and you may have the assurance of the rule, that such a plan of treatment as I have sketched out for you will be well borne, and will not alone aid you, in carrying your patient with comparative equanimity and comfort, through the acute stages of this disease, but, what is of infinitely greater importance, you will give him, the greatest possible security, against an occurrence of the *sequelæ* or manifestations of so-called chronic or tertiary syphilis.

LESSON XVII.

Résumé showing that the contagious property of syphilis is not an independent virus pervading all tissues, but is confined to the white blood, or tissue-building cells, and that the only peculiarity of such cells is a contagious influence which is not distinguishable by microscopical examination. That its effect is to induce hasty proliferation of cell material, and that the result of this is not primarily destructive, but causes disturbance through mechanical interference with processes of nutrition. The property of contagion, inherent in normal cell development; all troubles occurring after the contagious period of syphilis, which clinical observation has shown to be limited—necessarily considered as *sequelæ*. Mr. Hutchinson's views on this point; the views of Mr. Henry Lee and Mr. Lane. The *tubercular* eruption the first sequel of syphilis. Its characteristics and behavior. Syphilitic ecthyma; syphilitic rupia; no specific element in their composition. The lepra and psoriasis of syphilis not distinguishable from the simple forms except through effects of treatment, all caused by interference with natural functions of tissues. Evidences of this interference confined to the lymphatic channels. This view supported by Rindfleisch, also by effects of treatment, all alike requiring mercury and the iodide of potassium. Proposal to substitute the term *Period of Lymphatic Obstruction* for the old terms, *Tertiary* and *Quarternary Syphilis*. Reasons for claiming that this syphilitic obstruction is due to damage to lymph channels during the active period of syphilis.

THE SEQUELÆ OF SYPHILIS.

Syn.: Chronic or Late Syphilis, Tertiary and Quarternary Syphilis.—In following the natural history of syphilis, as portrayed in the preceding pages, it will be seen, that, wherever the syphilitic influence is recognized at a given point, culminating in a well-marked manifestation of syphilis, this, on microscopic examination, has been found to differ from the healthy surrounding structures, only by an excessive local proliferation and accumulation of cells, in no way distinguishable from normal germinal cells. It will also be seen that this local proliferation and accumulation, is favored by anatomical conditions, in localities long recognized, clinically, as the favorite seat of such manifestations.

The active period of syphilis, thus marked by excessive localized cell proliferation, was shown to be equally characterized by the contagious property attaching to

cells thus generated. Inoculation of the blood, and of the secretion of all open lesions, during the active period of syphilis, has been found capable of communicating syphilis promptly to healthy persons.

The physiological secretions—milk, saliva, mucous, urine, perspiration, tears, and the spermatic fluid—have not been proven to be agents of syphilitic infection. Where apparently so, in many cases, syphilitic lesions of the mouth or breast have been found, to account for the seeming inoculability of the saliva or of the milk. Repeated experiments have been made by inoculation of the spermatic fluid of a person proven to be in the active stage of syphilis, upon healthy persons, with absolutely negative results.* In this we find confirmation of our position, that the contagious property of syphilis is not an entity, an independent virus, pervading all the tissues and fluids of the organism, but that it is confined to the white blood or tissue-building cells. In this view of the matter we readily see how the physiological secretions above mentioned, which do not contain formative cells, are found also to be free from the contagious property of syphilis.

Thus far, the only distinguishing feature which has been recognized, between normal embryonal cells, and cells which make up the accumulations characteristic of the active stage of syphilis, is the possession, by the latter, of the contagious property. In other words, a *contagium*: the power of setting up in other cells, through simple contact, the same disposition to rapid proliferation, which the so-called syphilitic cells are known to possess. The direct result of this hasty proliferation, as far as we have yet been able to discover, is not a destructive action. It is, simply and only, what we should naturally expect from hastily generated normal material, in excess of the necessities of growth and repair. In representative, uncomplicated cases, it remains for a time, obstructing the tissues by its presence, and then through purely normal processes, (often of necessity set

*Dr. Mireur, of Marseilles. *Annales de Dermatologie et de Syphilographie*, No. 6, tome viii. 1877.

into operation by crowding of the newly-formed cells, prolonged pressure, and consequent innutrition, and also, from general causes), it undergoes fatty degeneration, and is in this way finally eliminated from the affected organism.*

Bäumler virtually supports this view † when he says of the active stage of syphilis, "If there are only a few local deposits, the elimination of the virus may be so much in excess of its production that the organism is gradually freed from it. This takes place in the majority of cases, and, *at the expiration of eighteen months or two years, the infection is entirely exhausted.*"

Mr. Hutchinson, of London, in speaking of the contagious property which attaches to the emasculated white blood cell, which we call pus, says, "All living pus is contagious. . . . I mean," he further says, "that all pus cells possess the power of setting up, when transferred to another home, if that home be a suitable one, a kind of inflammatory action similar to that from whence they themselves had originated." ‡ This, we know, results in the almost immediate death of cells in localities so contaminated. In the case of the germinal cells, contaminated by contact with the syphilitic cells, however, this results in a hasty genesis of cells, a too rapid production, which prevents their highest development; they fall by the way, are heaped up, undergo fatty degeneration, and are, or may be, eliminated. Nor is it alone in diseased cells that a contagious property is claimed to reside. We have distinguished authority for saying that, in the normal development of epithelial structures, the property of contagion is an essential feature. § If this be true, it at once becomes evident that the contagious property is not of necessity a virus; and it must, I think, be suggested, in this view of the matter, as equally evident,

* A fatty metamorphosis, entirely like that which occurs pathologically, occurs in the normal condition of the organism. Wagner, p. 305.

† P. 247 of Ziemssen's Cyclopædia, Am. ed., vol. iii.

‡ *London Lancet*, September 18, 1875, p. 409.

§ Text-Book of Pathological Histology. Rindfleisch. Am. ed., 1871, p. 100, § 83.

that the so-called virus of syphilis is simply the manifestation of a property or personal influence, inherent in all cells, whether healthy or degraded, and which is as subtle and intangible, as incapable of material demonstration, as the influence which one mind exerts over another. Is it not then possible, that the mischief which syphilis does, is rather the result of an interference with the normal processes, through hasty development, brought about by this influence, than of the action of a specific virus?

In any event this contagious property of syphilis ceases with the active period of the disease. After this has passed, the secretions of open lesions, and the blood, no longer contaminate. It may also be said, that, in by far the greater number of subjects of syphilis, (and more especially those who have been systematically and judiciously treated), they remain free from any farther sign of the disease. If this be so, then we may legitimately claim, that, at the termination of the active period of syphilis, just described, all subsequent troubles must be looked upon as *sequelæ*, and not as a stage of syphilis, any more than we should look upon dropsy as a stage of scarlet fever, or stricture as a stage of gonorrhœa. Mr. Hutchinson, who is recognized as one of the most advanced of the English authorities on syphilis, says: "What are called tertiary symptoms, do not constitute a necessary stage, and are rather to be regarded in the light of *sequelæ*, which may or may not show themselves."* Mr. Henry Lee (also a valued authority), in his Hunterian Lectures, delivered at the Royal College of Surgeons of England in 1875, presents the same view of so-called tertiary or late syphilis, thus: "The pathological changes in this class, occasionally, according to Mr. Lane's view, present themselves in patients, who have passed through the primary and secondary stages of syphilis, but *in whom the venereal poison no longer exists, and therefore cannot be transmitted.*"

This is, I know, quite at variance with the usual

* *London Lancet*, p. 83, January 17, 1874.

teaching in this matter. The accidents following upon the active period of syphilis are usually represented, not as sequelæ, but as the direct result of the syphilitic virus, which had never been completely eliminated, but had remained in the system in a latent state. Authorities are quite agreed, however, in regard to the clinical fact, that, after a varying interval, of from one to forty or fifty years from the acquirement of syphilis, a new variety of lesions appears in certain cases.

These are often characteristic, although widely different in locality, appearance, and results. Occurring only in a small proportion of the subjects of active syphilis, they are thus shown, not to constitute an essential stage of the disease, but the accident of it. Thus the so-called *tubercular eruption*, like the papular eruption of acute syphilis, in some respects, is often mistaken for it, but differing, in that

1st, it never* occurs in less than six months, and rarely under a year, from the acquirement of the initial lesion ;

2d, it is not symmetrical and generally distributed, but in patches, or groups, or single tubercles,

* I am aware that ulcerative lesions occur, though rarely, at the usual period for the papular eruption, that are accepted by some authorities as belonging to the later stages of the disease. I think, however, in all such cases, that the possible behavior of a papule or a lesion, resulting from the peculiar condition of the subject, will be sufficient to explain the nature of the accident without referring it to the so-called "tertiary stage;" or, if not, it will be found that the patient has had a previous attack of syphilis at a period sufficiently remote to account legitimately for the appearance of a tertiary lesion. The tubercle or its equivalent, viz., an accumulation of so-called *gummy* or germinal material, which is the result of a necessary previous stage, and lacks the contagious element, is the *first* of the accidents of the so-called tertiary stage—the sequel of syphilis. Notwithstanding that M. Cornil, in his recent excellent work on syphilis (p. 204), states that, "In the tubercles and gummata of the skin are seen the latest and deepest manifestations of cutaneous syphilis," yet he also states (p. 215) that "the very first symptoms of syphilis may be deep-generalized pustular or ulcerating eruptions," identical with those coming on after a period of many years (the *sequelæ*), "following immediately after the chancre."—*Cornil on Syphilis*. Am. ed., Phila., 1882. I do not hesitate to claim that such cases, where critically analyzed, will be found to be as rare, as where, in nature, fruit has the precedence of the blossom.—F. N. O.

3d, of deeper color, it is also more elevated—more juicy in appearance,

4th, while frequently ulcerating (and often extensively), it not unfrequently passes off without ulceration, and yet leaving well-marked cicatricial depressions on its site. This latter is the chief diagnostic point, independent of history or other associated lesion, of the tubercular eruption of syphilis. In other cases, under apparently the same conditions, an eruption, sero-pustular in character, may occur, the eruptive points varying from three to six or more millimetres in diameter, often sparsely scattered over the entire body, which soon become covered with thick yellow laminated incrustations, and these, when removed, discover only superficial loss of integument. This is known as the *Syphilitic Ecthyma*. And again, in still other individuals, one or many red spots may appear, which soon vesiculate and become covered with a dark sienna-colored scab, which accumulates in layers, and increasing in size, may reach even an inch or more in diameter, upon the removal of which sharply cut loss of tissue will be seen, not seldom involving the entire thickness of the integument. This is termed by authors the *Syphilitic Rupia*. Examination of all these lesions fails to discover any specific material or element in their composition. The microscope shows chiefly serum, lymph and pus cells, blood and epithelial débris. A depreciated condition of the general system, is always the precursor of such symptoms, especially marked in the rupetic variety. And yet again, eruptions may occur presenting appearances similar to simple lepra, or psoriasis, or eczema, oftentimes so nearly identical in appearance that only the test of treatment enables even the expert dermatologist to decide as to whether the disease is of simple or of syphilitic origin. Underneath the integument tumors sometimes occur, varying in size from a pea to a pullet's egg, in the cellular tissue, or in the substance of the muscular structures; often painless, seldom suppurating, except when subjected to prolonged and habitual pressure, often disappearing spontaneously and readily responding to suitable treatment. Tumors in

the bones, called *syphilitic nodes*, are also possible, occurring, like the previously described lesions of the cutaneous, cellular, and muscular structures, from accumulation of the so-called gummy material, at any time after a year or more from the occurrence of acute syphilis, and up to the latest years of life; painless or painful according as the periosteum is more or less rapidly distended or pressed upon by overlying tissues. Chiefly occurring on the anterior surface of the long bones, especially of the tibiæ, and on the external tables of the skull, occasionally involving the internal table and the diploe, and in such case sometimes disappearing spontaneously without involving the scalp, and without a trace of necrosis, but leaving distinct evidences of loss of bony substance through the influence of pressure by the material cause, the tumor. Similar tumors of bone may occur at any point throughout the bony system, producing disturbance by pressure on important structures.

Tumors in the various organs of the body, occur apparently from similar causes, and in the same irregular way in point of time, involving, in order of frequency, as follows: Testes, liver, kidneys, brain, lungs, heart, etc. In some cases walls of the blood-vessels are found infiltrated with the same material of which the tumors of syphilitic origin are found to be composed, and become obstructed, as in the brain, often causing fatty degeneration of the structures to which they are distributed. In some cases, cicatricial bands are found to develop in organs the subject of syphilitic tumors, and by contraction and consequent constriction, destroy the secreting structures, notably seen in the liver and testes of subjects suffering from the later effects of the syphilitic influence in these organs. It will thus be seen that the diseased conditions, enumerated as characteristic of chronic syphilis (the tertiary and quaternary syphilis of Lancereaux and other authors), are essentially different from true or acute syphilis, in date of appearance, mode and locality of development, and in the entire absence of the contagious syphilitic element. Microscopic examinations have brought to light the very important and interesting fact, that all

the various sequelæ of syphilis, are characterized by the presence of a peculiar material, which, from its physical properties, has received the name of "gummy material." This material has been proven, by repeated and exhaustive microscopical examinations, to be made up of gelatinous fluid, containing normal cells and nuclei, which do not differ in the least demonstrable degree, from the white blood cells and nuclei of a healthy person. Wagner, perhaps the most recent standard authority, says of this gummous material (which he terms syphiloma): "Microscopically syphiloma consists of cells, or nuclei, or both at the same time, so that sometimes the former, sometimes the latter, exceed in number. Young syphilomata, as well as the peripheral parts of the older ones, contain for the most part only nuclei, or nuclei and isolated cells; the older syphilomata, not yet very atrophic, consist for the most part only of cells, or of cells with few nuclei. The nuclei offer nothing characteristic. They are from 0.01 to 0.02 mm., large, round or rounded, or somewhat angular, and contain for the most part a distinct nucleolus. The cells resemble most uninucleate colorless blood corpuscles; their size varies, however, sometimes, between 0.01 and 0.03 mm.; some are even still larger."* Again Wagner (page 436) says: "The influence of syphiloma, on the organism, depends upon the fact, that the affected portions of the membrane and parenchymata, *are more or less incapable of function*; dependent partly on the deposit of cells, and especially of nuclei, upon compression or secondary atrophy of the gland cells, nerve fibres, ganglion cells," etc.

Bäumler, who fully adopts Wagner's views, says: "From the fact of the close resemblance of the cells which pervade the tissues, or occur in the form of young tissue growths, with the blood-corpuscles, it is evident that, however much, they (authors) may characterize syphilitic new formations, *they wholly lack specific microscopic characters.*" He also says: "Tumors of this sort (gummy), varying in consistency,

* Wagner's Manual of General Pathology, Am. ed., 1876, p. 435.

may develop in any organ in consequence of syphilis; but their favorite seats are in the subcutaneous cellular tissue, the skin, in and upon the bones, the liver, the testicles, the brain, the kidneys, and, especially in children, the lungs. According to Wagner's description," he further says, "they present the appearance of a grayish-red, soft, homogeneous mass, either without fluid contents or else yielding a scanty juicy-like mucus. They may occur as infiltrations of microscopic size scattered throughout the parenchyma of an organ; and even when they appear as sizable tumors, as large as a walnut or larger, they are not encysted nor sharply defined, but merge directly into the surrounding tissue." "The effects of a gummy tumor," says Bäumler, "may extend to a great distance in case it has caused contraction of the calibre of some vessel, especially of a blood-vessel, which is particularly liable to occur when the tumor has its seat in the adventitia of a vessel. Fatty degeneration and wide-spread processes of softening may be the consequences of a tumor in itself insignificant, as occasionally happens in the brain. When situated in the skin, in the subcutaneous cellular tissue, upon mucous membranes and superficial bones, the gumma often makes its way to the surface, since in these situations it is not uniformly enclosed on all sides, but is exposed to unequal pressure. The entire infiltration then ulcerates." M. Cornil still later says of the histology of the "gummata:" "All the pre-existing cellulo-vascular tissue is thus infiltrated and crowded with cells, the enormous quantity of which, *strangles the normal tissue elements, and impairs the circulation.*" * It is reasonable to conclude, from the foregoing facts and views, that contraction of vessels, often plays an important part in causing the lesions of so-called tertiary syphilis: a purely mechanical matter quite independent of the influence of any virus. In passing, I desire also to call your attention to the statement of Bäumler, "that gumma often makes its way

* "Cornil on Syphilis," Am. ed., Henry C. Lea's Son & Co., Phila., 1883; p. 207. Ibid., at pp. 208 and 209, illustrations are given of the manner in which these cells obstruct and obliterate capillaries and veins.

to the surface." I hope to be able subsequently to show how this occurs—not making its way, but progressing, by natural forces, in line of the natural physiological channels.

Ricord claims that tertiary lesions are not inoculable, and cannot be transmitted by hereditary descent. Bumstead states, in his last edition, after reviewing this matter, "Hence we consider the blood and the secretions in tertiary syphilis innocuous." * "Diday performed inoculations with the blood of persons in the tertiary stage of syphilis, and invariably with a negative result. Von Baresprung states that from observation as well as experiment he is persuaded that so soon as the syphilis has passed into the destructive forms of its tertiary stage, it ceases to generate an inoculable virus," and, says Bäumlér, "clinical observation seems to confirm this view, both in respect to direct contagion and with reference to the inheritance of the disease." †

These authorities, together with Lee, Hutchinson, Lancereaux, and many others of our best clinical and scientific observers, thus agree, fully, on this very important point. What then, is there to show that the so-called "period of gummy products" (Lancereaux) is not simply a period of sequelæ, when they are found, practically, by competent observers, to be free from the contagious property, and when by scientific investigators it is shown that they are capable of producing, *without a virus*, all the lesions, without exception, which ever occur in the so-called tertiary or gummy stage of syphilis?—producing them, too, simply by interference with function of vessels and organs, not improbably through pressure, occasioned by the presence of abnormal, or excessive accumulations of material, which the most experienced and learned microscopists, cannot distinguish, from the normal elements of new formations.

If then we accept the lesions of the so-called tertiary stage (or the period of gummy products of Lancereaux)

* Venereal Diseases, Bumstead and Taylor, p. 448.

† Ziemssen's Cyclopædia, Am. ed., iii. 57.

as sequelæ, where shall we look for the causes of the undue accumulations of normal germinal material, at every point in the human organism, which are known to occur as a sequence of syphilis? Naturally, it appears to me, in interferences with the lymphatic channels, through which, according to Rindfleisch, the nutritive material exuded into the tissues, in excess of the necessities of growth and repair, is returned to the general circulation.*

According to the same distinguished authority,† “Luxurious new formations, catarrhs, and surface secretions of all kinds, must be produced when the lymph conveyance is hindered, and,” he further says, “we will find this position in pathology very frequently confirmed.” One thing is now admitted by all recent accepted authorities, namely, that all the surface secretions and new formations of the tertiary or gummy period, all the infiltrations and tumors, all the peccant elements which produce the varied lesions in the skin, in the cellular tissue, in the bones, in the viscera; by whatever name characterized, are but the various forms of infiltration or deposit of gummy material. If this is, as it would appear by the results of scientific investigation to be, nothing more nor less than normal germinal elements, thus retained at various points, then the only legitimate way of accounting for this retention, would appear to be through obstructions, “hindrances to the lymph conveyance,” which, Rindfleisch insists, is of itself sufficient, independently of any question of syphilis, to produce just such results as are known to occur in the so-called tertiary stage or period of gummy products.

And yet another circumstance would favor this view: clinical experience has shown conclusively that whatever the form or locality or name of a lesion, whether in the skin as a scaling eruption, or as a tubercular eruption, or as a heaping up of gummy exudation in scabs, with or without ulceration, or as an ulcerative

* Rindfleisch, *Pathological History*, Am. ed., 1871, p. 92.

† *Ibid.*, p. 93.

loss of tissue, or whether as a gummy tumor in the cellular tissue, in the bones, in the viscera, or in the brain and nervous system—one and the same treatment is adopted and found most efficacious and judicious for all, namely, *the administration of mercury and the iodide of potassium*. I have not heretofore objected to the term *gummy period* (so called only from the similarity of its products to the viscid material which it was believed to resemble), nor to the term *tertiary*, which is a purely arbitrary one; but it appears to me that we may now venture to substitute for these *the period of lymphatic obstruction*, as more scientific, because expressing the localization of lymphatic elements, which is proven to occur, and as suggesting the lymphatic canal system as among the possible causes of that localization. It appears to me that, inasmuch as it has been shown that the lymphatic spaces and vessels are primarily and chiefly affected and obstructed, during the active stage of syphilis, it is not unreasonable to infer that damage might have occurred to those spaces and vessels, during the active period of syphilis, which, if properly investigated, would lead to the true explanation of the failure of that system, to return to the general circulation, the germinal material exuded or developed in the tissues, in excess of the necessities of growth and repair, such as is practically demonstrated to have occurred in the so-called tertiary or gummy period of syphilis. There are various known facts and analogies which afford strong presumptive and circumstantial evidence that this view is the correct one. Among these we have, first, the fact, generally recognized, that the more severe and prolonged the secondary or active stage of syphilis the more certain and severe are the so-called tertiary or gummous manifestations.* Second, the results of treatment show, that the difficulty is not simply an aggregation or infiltration of material, which, when removed, restores the patient permanently, but that the conditions for its reproduction remain, and relapses occur.

* Hutchinson, *London Lancet*, January 31, 1874, p. 159.

Thus the iodide of potassium, is recognized as capable of most rapidly removing the gummous material, and thus of relieving symptoms; but mercury is found requisite to produce permanent immunity. The iodide of potassium, acts readily in removing recent new formations and cell accumulations, probably through the iodine it contains. The *fucus vesiculosus*, a remedy in use for obesity, and popularly known as "antifat," owes its virtues to the same ingredient. But mercury is known not only to hasten dissolution and elimination of fatty matters and new formations: it is, besides, the only agent with which we can expect to disintegrate more or less long-standing fibrous obstructions.

In the gummy accumulations of so-called tertiary syphilis, we are obliged to infer that some condition remains, after the removal of this material, which predisposes to, or causes subsequent reaccumulation. What is more likely, than that such condition, consists in obstruction of lymphatic vessels, the office of which is to carry just such material as we find producing the difficulty? Vessels, too, that have been, more than any other structures, involved in recognized troubles during the active stage of the disease. More or less inflammatory action, usually of a very low grade, is recognised at different superficial points in the lymphatic system during this period. The well-known tendency of all such action, is to the deposit of fibrous material—the very material through which cicatricial contractions of other tissues are brought about. Analogous, in a degree, are the conditions which result in stricture of the urethral canal, ten, twenty, or even forty years after the original inflammation: conditions which set in motion a process which culminates, finally, in obstruction to the passage of urine.

It has been claimed that much of the trouble, in so-called tertiary syphilis, may be the result of widespread fatty degeneration caused by obstruction of vessels.

It is well known that fatty metamorphosis occurs more easily in some subjects than in others—that purulent degeneration is most readily set up in the

debilitated and diseased. It is also claimed by Hutchinson and others that the liability to, and severity of, the lesions of the so-called tertiary period of syphilis "is in proportion to the duration of the secondary stage."

Hence we may conclude, that the varied degrees and forms of so-called tertiary manifestations, depend upon, first, the damage caused during the "duration of the secondary stage," and inferentially in consequence of it; and, secondly, upon the condition of the individual affected, and this quite independently of any specific virus.

Notwithstanding the variety in locality, physical characteristics, and date of appearance, the sequelæ of syphilis practically call for the same remedial measures. Whether it be a superficial scaling or a tubercular eruption, an ulcerative lesion of the integument, an osseous swelling or a necrosis, a tumor in the cellular tissue or in the brain, or in any other organ or locality; whether it be a painless hypertrophy of the tongue or of the testicle, no matter how slight in degree or how destructive, all the lesions of this period are most efficiently treated by some form of mercurial, combined with the iodide of potassium. It is only necessary to know that the lesion presenting, is a legitimate sequel of syphilis, to determine the character of the remedy to be used. The form, the size, and the frequency of dose will be suggested by the circumstances of each case; but the agents through which we may expect the most rapid removal of the so-called "gummos material," upon the presence of which we are warranted in believing that all the trouble depends, are mercury and the iodide of potassium. It is the living material, obstructing nutrition of parts, which, in every instance, produces the destruction of tissue, as well as disturbances of function, that characterize the sequelæ of syphilis. This is the inevitable conclusion to which we are led, by the published results of examinations, made by the most accomplished pathologists of modern times. There is no disagreement in regard to the presence of the so-called "gumma" of syphilis in all such cases. Destruction from the influence of syphilis may occur at any point where lymphatic vessels are

present—in other words, at any point to which nutritive material is carried; not only to the skin, the cellular, muscular, bony, and even cartilaginous structures, but to every part of the brain and nervous system. It will also be found that the behavior of tissues and structures, infiltrated with the so-called gummy material of syphilis, in all forms in which it presents a destructive result, shows nothing, either by inoculation or by any physical property, which proves it capable of acting otherwise than by the mechanical influence of its presence, by interfering with function and cutting off nutrition, through diminishing the calibre of blood-vessels, or possibly effecting their entire obliteration.

The measures, theoretically, most efficient in setting up a tissue metamorphosis in, and removing this gummy material, are those which, practically and clinically, are found most promptly serviceable in curing the late lesions of syphilis. In point of fact, it is so well understood that mercury and the iodide of potassium, when judiciously administered, have a specific influence in curing the sequelæ of syphilis, of whatever form or degree, that whenever a case occurs in which the diagnosis is doubtful it is customary to test the character of the lesion in question, by use of these remedies: failure to relieve, constituting a positive evidence against the syphilitic origin of the trouble.

The administration of mercury and the iodide of potassium, combined, is found most serviceable in the early syphilitic sequelæ, as for instance, in the tubercular eruptions which may appear before the contagious syphilitic principle has been eliminated from the affected organism, that is to say, within the first two or three years from the date of the acquirement of the disease.

These remedies, combined as in the following formula, are usually well borne:

℞	Biniiodide of mercury.	gr. iii.
	Iodide of potassium.....	3 iii-vi.
	Tr. of orange peel.....	
	Syrup of orange peel.....	āā ʒ i.
	Aquæ.....	ad. ʒ viii.
	M.	

Sig.—A teaspoonful, thrice daily, after meals.

As the ordinary teaspoon holds somewhat more than a drachm, it will be found that the patient in the above prescription will get one sixteenth gr. of the biniodide, and about 4 to 8 grains of the iodide of potassium at a dose.

The same may be judiciously used in every form, stage, and date of syphilitic sequelæ. If, however, the lesion is one where destructive action is a prominent feature, or the brain or nervous system is the seat of the affection, the iodide of potassium may be increased by the addition of a drop of the saturated solution,

Iodide of potass.....	3 viii.
Distilled water.....	3 viii.
M.	

at every dose, in from a wineglass to a tumbler of milk or water (preferably the former), up to 60 or 80 drops, or until troublesome iodism results. The favorable effect of this treatment may be often seen within a few days, but occasionally no benefit will be observed until the dose of the iodide has reached a very high point, viz., a drachm at a dose, and in cases of cerebral gummata this dose may require to be continued over a very long period—several months, or even longer. In the very largest majority of cases the foregoing plan may be successfully pursued, varying the amount of mercurial, or of the iodide, within the limits indicated, in proportion to the gravity and urgency of the case. The mercurial reaches its limit of efficiency when the constitution becomes slightly affected by it, as indicated by softening or tenderness of the gums and teeth, and should, at that limit, always be stayed. Should the iodide of potassium fail of toleration, the iodide of sodium may be substituted and better borne in the same doses. If still iodism quickly result, as indicated by irritation of mucous membrane of the digestive tract, the tincture of iodine may be administered in doses of 10 to 40 drops in a wineglass of starch as prepared for laundry use, or what in my experience has often been a most serviceable and

agreeable substitute for the iodide of potassium and sodium, viz:

R	Iodine (crystals).....	gr. xviii.
	Iodide of potassium.....	3 i-iii
	Water.....	q. s.
	Stuart's syrup or plain molasses.....	to $\frac{3}{4}$ viii.
M.		

Let stand 12 hours.

Sig. From a dessert to a tablespoonful, three or four times a day, after meals.

Cod-liver oil is always indicated in cases when any cachexia is present, from syphilitic influence, or debility from any other cause. The diet should be simple and nutritious, and adapted judiciously to the condition of the patient. Stimulants should be denied except in cases of especial urgency on account of habitual use and great debility—red wines may be permitted, at meals, in moderate quantity.

The pursuance of the general plan just presented, covers all cases, as far as internal remedies are concerned. Mercurial fumigations may be, and often are, promptly serviceable, especially in the ulcerative lesions, and may be substituted for the internal administration of mercury. Twenty grains of resublimed calomel may be vaporized in a Lee's lamp, placed under a cane-bottom chair, and the patient covered in with a rubber cloak, or even an ordinary blanket, and this repeated three or four times a week—due care being used to prevent taking cold after the operation—and continued until the disappearance of the lesions, or the occurrence of the specific effect of the mercurial.

In regard to local applications for the non-ulcerating forms of trouble, ointments containing a mercurial ingredient, such as the ung. mas. hyd., the ung. hyd. nitratis, or ung. hyd. præcip. alb., or a combination of the oleate of mercury (a 6 per cent solution), with an equal quantity of cosmoline or vaseline, is often serviceable, especially in the scaling and non-ulcerating tubercular eruptions.

For local application to open ulcerations, or losses of tissue, through the influence of the so-called gummy in-

filtration, especially when advancing, pointed, and painful, the powdered iodoform is often promptly beneficial. In all forms of open lesion of syphilitic origin this drug appears to be especially potent in its sedative, antiseptic, and healing properties; perhaps it is the most so of any.

Throughout the treatment of the sequelæ of syphilis the effort to appreciate the causes of any presenting trouble—the influences local and constitutional which may tend to modify, or aggravate, or interfere in any way with the favorable progress of recovery should be unremitting, and not to rely upon or seek after some drug or prescription which is vaunted for the cure of syphilis. Judicious attention to the general health, and to the idiosyncrasies of patients, often brings success in cases which would otherwise result disastrously. Many subjects of syphilitic sequelæ, suffer greatly from the apprehension of communicating the disease to others. They are entitled to the assurance that such troubles are not contagious, and are of purely personal interest after a lapse of four or five years from the occurrence of the initial lesion of syphilis, and this whether a systematic course of treatment has been pursued in the interval or the patient has been quite neglected in this respect. It is quite true that many cases have been reported claiming communication of syphilis five, ten, and even twenty years after the acquirement of the disease, but a single well-observed, well-authenticated case, reported by a competent authority, has not yet come to my knowledge, nor have I ever known such an accident to occur after three years from the date of the initial lesion.

CLINICAL CASES ILLUSTRATIVE OF THE VARIOUS SEQUELÆ OF SYPHILIS.

Case I. W. W.; 28, physician. In December, 1874, after repeated suspicious connections during many months, one day discovered a small sore on his penis. This was treated simply and only locally, and continuing in a sluggish way for a couple of months, when it was proved to be a true initial lesion of syphilis by the

appearance of a well-marked roseolous eruption and mucous patches in the throat. A systematic mercurial treatment was then initiated, bringing the system gently under its influence, and continuing at the point of easy toleration, occasionally pushing it up to sensitiveness of the gums or teeth. When this occurred the iodide of potassium was substituted until all evidences of the mercurialism had disappeared, and then the mercurial was resumed, either in the form of pil. duplex (mass. hydrarg., 2 grs.; ferri exsic., 1 gr.) or pil. proto-iodid. hydrarg. ($\frac{1}{2}$ gr.), three times daily. Under this treatment, borne satisfactorily for eighteen months, no further manifestations of syphilis occurred. The glands in the groin and cervical regions, and also in the epitrochlear spaces, which were characteristically enlarged at the date of discovery of the roseola, had apparently become reduced more than one half in size. It was confidently asserted by the doctor that his glands were enlarged for years before the discovery of the initial lesion, and were now as small as he remembered ever to have seen them. In consequence of this statement, in connection with the entire absence of any congestion of the faucial mucous membrane or any abnormal appearance at the site of the initial lesion or any evidence of syphilis at any other point, all treatment was suspended. After six months, during which there was no sign of trouble of any sort, local or general, attention was called to a cluster of dark red papules (twenty to thirty), about the size of a small split pea, situated on the integument of the left temporal region. They were quite prominent, insensitive, and while firm to touch had a juicy, semi-transparent appearance at the centre. On examination another patch of similar eruptions nearly as large as the hand was discovered under the left scapula. These clusters of apparent papules constituted a typical illustration of the simplest form of the *tubercular syphilide*, one of the most common and earliest of the sequelæ of syphilis. Treatment by a combination of mercury and the iodide of potassium (mist. biniodid. hydrarg., No. , page) was at once commenced, and continued steadily, the eruption for

a time increasing in prominence. At two points alone slight ulceration occurred, and a scab about the size of a five-cent piece was formed. After about four weeks the tubercles began to decline, with slight desquamation, and finally to sink below the surface, so that by the third month of treatment the only remaining evidence was a cicatricial depression on the site of each tubercle; the intervening spaces between these points being of a faint coppery hue. Treatment discontinued, but, in a month, several tubercles had returned, and again disappeared under same treatment as before—mild mercurial ointment (ung. hyd. nit. et vaseline, āā 3 ss)—applied locally for two months. Again, on remitting treatment, in a week or two, evidences of return of the trouble on the side of the forehead were visible; several spots were simply reddened, while small scabs formed on others. The treatment was resumed, and re-enforced by fumigations with the re-sublimed calomel tri-weekly, and this continued steadily for three months, when, no evidence of the return of the trouble presenting, the cicatricial spots distinctly paler than the surrounding skin, and the coppery stain scarcely noticeable, the treatment was again discontinued. August, 1881, the doctor called with the statement that he was about to be married unless some important objection should be raised. The cicatricial depressions were still distinct in both localities and quite white, and no evidence of activity of the former trouble. Glands in the various localities were distinct, but not changed by time or treatment since the cessation of active medication, eighteen months after infection.

Thus a period of five years had then elapsed since any sign of activity of the disease had been manifested, and it was concluded that there was no valid reason for postponing marriage,—always excepting the possibility of some future trouble of local character, but not susceptible of hereditary transmission. Now up to February, 1883, he has had no further trouble; has a wife and child, now eight months old, perfectly well.

Remarks.—As recent painless enlargement and induration of lymphatic glands (first, those directly connected

with the initial lesion of syphilis; and second, groups of glands at characteristic points, such as the cervical and epitrochlear) are the most certain diagnostic signs of the presence of syphilis, in a given case, so their gradual subsidence is the most sure evidence of the efficiency of treatment, and their final and complete disappearance the most satisfactory proof of the complete cure of the disease.

It is, however, necessary to mention that painless gland enlargements are present, in some persons, independently of syphilis, or of any distinct scrofulous antecedents, or evidences of this or any other dyscrasia. Hence it becomes important to note the condition, in this respect of any person, presenting with known or suspected initial lesion of syphilis, not only for the diagnostic value attaching to recent painless gland enlargements, but as an aid in determining the proper duration of constitutional treatment. When the glands are in normal condition at the time of inoculation of syphilis—*i.e.*, not susceptible of recognition by the touch—a continuation of the treatment is necessary until their restoration to such condition. On the other hand, when appreciable gland enlargements are present before the system is invaded by the syphilitic influence, there will be no such guide for the cessation of treatment, and a much longer period will be required, before the patient can be assured of the propriety of discontinuing anti-syphilitic remedial measures.

The administration of mercury by fumigation, as in the foregoing case, while not suitable for general systematic treatment, is an excellent adjunct in certain cases. The necessity of a prolonged feeble mercurial influence is best met by its judicious internal administration, but in cases where this is not well borne, it may be supplemented by two or three fumigations a week—steadily, if practicable, or at intervals, when it appears desirable to produce the constitutional evidences of the mercurial influence. It is especially adapted to cases where eruptive and ulcerative troubles are present. The method of application is exceedingly simple. An ordinary tin basin set upon a couple of bricks, high enough

to admit a small alcohol lamp to be placed under the basin. From fifteen to thirty grains of pure calomel (re-sublimed to carry off the free hydrochloric acid, which is very irritating to the respiratory apparatus) is placed in the basin over the lamp. This under a cane-bottomed or open-worked chair. The patient sits on this naked, and is then enveloped closely in an ordinary blanket—the lamp is lighted, and in the course of from ten to twenty minutes the calomel is vaporized, and deposited to a greater or less extent on the surface of the body. Still wrapped in the blanket, or slipping on a flannel night-dress, the patient gets at once into bed, and remains through the night. During the fumigation the vapor may be inhaled from time to time to advantage, especially if there are open lesions of the mouth or throat, or if a prompt mercurial effect is desired. If an irritative cough results, inhalation should be very limited, or suspended entirely. Where it is available, the fumigation lamp invented by Mr. Henry Lee of London, and in general use under the name of Lee's lamp, is preferable. In this a small amount of water is evaporated with the calomel. An ample water-proof garment in place of the blanket is also an improvement, but the results are fully much the same as with the simpler apparatus. There is no more danger of taking cold after a mercurial bath or fumigation than after a simple warm bath, but it is desirable to secure a temperature in the room of about 70° F., and to have the patient clad habitually in flannels, light or heavy according to the season, throughout the period during which the baths are administered. When the mercurial fumigation is relied upon alone, and the patient is robust, it may be used nightly, using ten to sixteen grains, and continued for months without producing the apparent constitutional effects. If, however, signs of the mercurial influence appear in the mouth and breath, the fumigations should be promptly suspended. The inconveniences attendant on this mode of treatment are such, that except it is manifestly the only way the mercurial can be efficiently introduced, the treatment by innunc-

tion, or through internal remedies will be found greatly preferable.

Case II. June 10th, 1874, N. L., 46, naval officer, presented with a general and quite profuse, large, ham-colored, papular eruption, slightly scaling at borders, of some papules, chiefly on body and legs and arms, none on face. Mucous patches in the mouth; well-marked gland enlargements in the cervical region, viz. along the posterior border of the sterno-cleido-mastoid muscle and of the trapezius, also in the epitrochlear and in the inguinal regions. On further examination, an indurated lump, the size of a pea, was found in the tissues of the prepuce on the left side. This was said to have come with a small sore some six months previously. Had consulted several surgeons, who thought his sore a simple one. It finally healed, after several weeks' continuance, through simple applications alone, but left a hard kernel on its site. No more attention was paid to the matter until the appearance of the eruption, some three weeks previously, when he was suffering from a supposed malarial attack. Having now some suspicions that his trouble was syphilitic, and not then desirous of confiding in the medical officer of his ship, he waited without treatment until his arrival in port. The case was one of undoubted syphilis in full bloom, and was at once put upon a systematic mercurial treatment. This was carried on now under the care of another surgeon—a most accomplished medical man—for about a year. During this time several consultations were held. The eruption, and all other external lesions, passed off satisfactorily. The chief difficulty experienced was a failure to produce the constitutional effect of mercury by the ordinary means. Three at first, then four, five, and even six pil. duplex (each 2 grs. mass. hydrarg. and 1 of exsiccated sulph. of iron), were given daily, without apparent effect either on the gums or on the digestive apparatus. Patient's general health excellent. Small doses of calomel ($\frac{1}{2}$ gr. every two hours) were given then in addition until gums responded, and at the same time a bilious diarrhœa set in and continued for several days. When this and the other evidences of mercurial action

had completely disappeared, the patient resumed the mercurial in the form of pil. proto-iodid. hydrarg., three ¼-gr. pills, three times a day. The treatment was pursued steadily, for about three months, making about twenty months since the acquirement of the disease, and over a year of full and systematic treatment. This course was remarkably well borne, in every respect, and the patient was in excellent general health and spirits. There was now no external evidence of syphilis, and the glands in the various regions were no longer characteristically enlarged. Leaving home for a three months' cruise, the patient returned presenting a thickly studded tubercular patch about the size of his hand, under the left scapula: tubercles size of a grape-seed, and of a pale purplish-red color—with neither itching nor tenderness to touch. Another group, chiefly of large tubercles, covered with brown serous scabs, ranging in size from a pea to a five-cent piece, arranged in a horseshoe form four or five inches in diameter, appeared on the left thigh; while several small tubercles were scattered irregularly over the buttocks,—thus presenting a well-marked specimen of the so-called tubercular syphilide in its several characteristic forms: 1st. The simple tubercular under the scapula, in an irregular patch, with each tubercle distinct, and of pale purplish hue, with no tendency to ulceration or exudation of serum; this kind disappearing slowly by absorption of the material composing the tubercle, and leaving a distinct depressed cicatrix to mark the site of each. 2d. The tubercles coalescing and extending by a superficial ulceration, exuding serum and forming brownish scabs with a tendency to the horseshoe shape. In the arrangement of this lesion, the scabs, often quite thick, on removal presented a superficial surface of large florid granulations scantily bathed in serum, and bleeding at slight touch. The so-called impetigenous tubercular *syphilide*. 3d. Tubercles from size of a grain of pearl-barley to a pea, varying in color from pale red to purple, irregularly scattered about; also some larger, quite pustular in appearance, some with yellow and others with scabs of quite a dark brown color.

All these had come on so insidiously, so entirely without pain or even itching, that they had only been discovered by the patient to be more than accidental pimples a week or so previously, but had evidently been present a month or more. The treatment was changed from the pil. proto-iodid. hyd. to the mist. biniodid. hydrarg.,* a teaspoonful thrice daily. Scabs poulticed off, and an ointment composed of nitrate of mercury ung. and vaseline, equal parts, applied morning and night. Improvement followed, especially in the open lesions; but after a couple of months, when the first crop had almost disappeared, others appeared on the right calf. Treatment changed to nightly mercurial fumigations (20 grs. calomel), and increase in the iodide of potassium—increasing from eight grains three times a day, a drop for each dose, up to sixty, and taken in a tumbler of milk. After several months, taking from fifteen to twenty fumigations a month, and keeping the iodide at about sixty grains thrice daily, the eruption entirely disappeared, leaving slight, pale, depressed, and corrugated cicatrices on the body, and deep coppery stains on the extremities. The treatment was then omitted, the patient still being in good general health. Capsules of cod-liver oil and iron (Mathey Caylus), administered. After a month or so, other crops, chiefly pustular, came to the surface, apparently *on the site of the former eruptions*, and *came and went* for the next six months, getting better in one place and then cropping out in groups of half a dozen or so in another, and this under a systematic treatment as before mentioned, carried out with as much regularity and persistence as was possible under the circumstances. Relaxing it, for even a few days, was followed by more or less return of the trouble, and it was fully two years after the appearance of the first tubercular eruption before the trouble entirely ceased to recur. During this time no points were attacked except those first mentioned—under the scapula, and on the thigh and buttocks, and soon after on the right calf; after this the *recurrences were in the same*

* See formula, p. 92.

points or in their immediate vicinity. During the entire period covered by the treatment the patient was most of his time at sea, under favorable hygienic conditions, and living a temperate and regular life. Within the last year (1882) the above-mentioned person was seen in consultation for what was supposed to be a malarial neuralgia. There was no history of any recurrence of trouble which could be reasonably attributed to the syphilitic influence for the previous five years. The neuralgia, which was chiefly in the muscles of the spine, after resisting treatment by the iodide for several weeks, finally passed away under the influence of a month's sojourn in the tropics.

Remarks.—The chief interest involved in the appearance of an eruption, after the eighth or tenth month of syphilis, is as to whether it is to be accounted as a sequel of the active disease, or is an evidence of the active presence of syphilitic cell material in the organism. After the first general papular eruption, which, as a rule, appears between the third and the seventh month, and is more or less symmetrical in its distribution, groups of papules may develop on the shoulder or arm or back or forehead, which, although usually darker and more likely to assume an annular or crescentic form, may present all the physical characteristics of the papules of the earlier general eruption. These are known as the *recurring papular syphilides*, and are supposed to be the result of a release of accidentally imprisoned infective cell material from lymphatic glands, in the immediate vicinity of the eruption, and to indicate a continued activity of the contagious element.*

It is quite impossible, in the present state of our knowledge of this matter, to make a positive diagnosis in cases of doubt, until sufficient time has passed to observe the

* "The secretions of syphilitic lesions are found to consist of a serous fluid containing numerous shining granules or molecules, which are masses of protoplasm or germinal matter holding the contagious properties of syphilis. These microscopic bodies are probably taken into the circulation by the *lymphatics* and conveyed over the body." (Bumstead and Taylor on the Venereal Diseases, fourth edition. Henry C. Lea, Phila., 1879. P. 443.)

manner in which the tissues occupied by the eruption, are affected by the presence and the final absorption of the material causing it. Thus the papule, having its origin in an accumulation (proliferation *in loco?*) of germinal cells (commencing, according to Kohn and others, always in a papilla cutis), has several characteristic points. 1st. In certain cases the cells thus crowded together "are not destined to become permanently organized, as they degenerate and disappear, or assume a dull granular appearance, undergo fatty degeneration and are absorbed. Or they may become heaped together in the form of detritus and form pus."*

Thus they either "undergo fatty degeneration and become absorbed," *leaving no loss of tissue to mark their site*, or they become pustules. The tubercle, on the other hand, is made up of the so-called "*gummy*" or germinal material, identical with that found in the lymph channels; arrested by localized obstruction of such channels; this localized accumulation causing absorption of the tissue in which it is located, finally itself undergoing fatty degeneration and absorption, a depression or cicatrix is left which is a sure diagnostic mark of the uncomplicated syphilitic tubercle.† These so-called "gummy exudations," characterizing as they do all the sequelæ of syphilis (the secretions of which are non-contagious), form the distinguishing feature between syphilis, as a contagious disease, and its sequelæ. Their occurrence, in whatever locality or form, calls for change or modification in the treatment. Iodine and the iodide of potassium having been found to possess a peculiar power in causing the fatty degeneration and elimination of the so-called gummy material is then found promptly efficacious in aiding in the cure.‡

* Caractères cliniques et histologiques des Syphilis, par Moritz Kohn, *Wiener Wochenschrift*. Caractères, 1870. No. 55, *Archives Générales de Médecine*, March, 1872.

† See Van Buren and Keyes, *Genito-Urinary Diseases, with Syphilis*, page 583. Appleton & Co., New York, 1874.

‡ As these processes are quite distinct in their origin they may be present at one and the same time, and thus it may occur that although the tubercular eruption—a sequel of syphilis—is present, the *contagious material* represented by the papule may still exist in the organism; the

The punctate form of the tubercular syphilide, as first described, is usually the earliest of the syphilitic sequelæ, and rarely appears after the third year. The superficial ulceration, with a tendency to the crescentic, or horseshoe arrangement, is next in order, and, is occasionally associated with it, as in the foregoing case, but may occur as late as the tenth and even the twentieth year after infection, and is likely to be especially severe and extensive in cases of chronic alcoholism.

Tubercles occasionally appear singly, or in small groups, on the face, especially on the *alæ nasi*, and, ulcerating superficially, become scabbed over and pursue a very sluggish course, often for many months, and are not unfrequently mistaken for simple lupus. Under favorable hygienic conditions, all these forms yield promptly to treatment: locally, by iodoform, or the ung. hydrarg. nitratis and vaseline; and internally by combination of mercury and the iodide of potassium, as in the *misturæ biniodid.*, and additional iodide of potassium in doses increasing by one drop at each dose up to 60, thrice daily, if well borne, always taken well diluted—in half a tumbler, and finally a tumbler of fluid, preferably of milk. In this way the stomach is rarely rebellious to the maximum dose.

It is a fact well understood by all who have experience in the tubercular forms of syphilis, that local measures, while apparently hastening the cure, are almost wholly useless, except in combination with mercury and the iodide of potassium. It is also equally appreciated that while prompt benefit, is almost certain to follow the use of the iodide of potassium, recurrences of the trouble are much more frequent, than when this

limit of contagion in acute syphilis having been ascertained in the very greatest majority of cases not to exceed three years. Bearing this in mind, it may then be said that although the presenting lesion being tubercular and by its origin illustrating the non-contagious stage of syphilis, yet it cannot be claimed as free from virulence (*i.e.*, power of contagion) until two or more years have passed and all gland enlargements dependent upon syphilis have disappeared; but that after such proof of the termination of the acute stage of the disease, the presence of such tubercular eruption would not indicate a power to transmit syphilis by direct contact or through heredity.

remedy is used in combination with a mild mercurial treatment, either internally or by innunction or fumigation. Such behavior, which is recognized as a clinical fact, is most significant of the conditions which demand treatment. The accumulations of the arrested germinal material, or so-called gumma, as the immediate recognized cause of the local lesions, are readily acted upon by the iodide of potassium, (the weaker agent in producing tissue metamorphosis), while the permanence of results is better secured by the mercurial, which has the greater power to cause a modification, if not a complete metamorphosis of the material causing the obstruction. In the absence of absolute proof, as to the degree and quality of the obstruction in the lymph channels, it may be possible, that this is due, in some cases, to actual closure by cicatricial deposit, such as is seen constricting the parenchymatous structure of the liver, the testicle, etc. If this is the fact, removal of such obstructive material by any sort of treatment is scarcely probable. This would account for the repeated recurrences of trouble, temporarily relieved by treatment, and constituting a form of what is termed a syphilitic dyscrasia. It may also be possible, that, where such cicatricial obliteration of lymph channels is not extensive, the circulation is temporarily relieved by elimination of the excess through treatment, or through fatty metamorphosis, *sua sponte*, until the dilatation of adjoining or subsidiary efferent channels shall afford permanent relief. It is a clinical fact that, as in the foregoing case, relapses continue to occur for years even, and the case is at last permanently cured by efficient treatment: while in others, the troubles, with or without treatment, remain until the termination of the life of the patient, notwithstanding the most judicious care.*

* However much the explanation of gummous collections may need absolute microscopical demonstration, it is conceded by all modern pathologists: 1st. That the so-called gummous material constitutes in some way the sum and substance of all the tertiary and quaternary lesions: in other words, *the sequela of syphilis*. 2d. That this material does not differ microscopically in any appreciable way from the normal germinal elements, such as are found in all the lymphatic gland, channels, and spaces in the human organism. If, then, this material present to a certain degree in all

CASE III. W. McN.; merchant; 42. Temperate, ordinarily healthy; had a well-marked open initial lesion of syphilis at 25 years of age. This was followed by a general papular eruption, at about the fifth month. Treatment desultory, until the appearance of the eruption, when he came under my observation, and was put upon pil. duplex (mass. hydrarg. et ferri). This treatment was well borne, and continued for a year and a half very steadily; occasional intermissions of a few days only, when slight evidences of mercurialism occurred. With the exception of several mucous patches in the mouth, and slight ulceration of the tonsils, during the sixth month, there were no open lesions of any sort. General and local gland enlargements had declined satisfactorily. The patient at this point was put upon the mist. biniodid. hyd. (potas. iodid. 8 grs., hydrarg. biniodid. $\frac{1}{16}$), a teaspoonfull thrice daily, and it was faithfully continued for the following six months. During this time the patient was apparently in perfect health. At its close, the only evidence of syphilitic trouble, was the abnormal, but not greatly enlarged, lymphatic glands, at all characteristic points. As these glands had not diminished, appreciably, during the last six months of treatment, it was concluded, in the absence of knowledge of their condition before the accession of syphilis, that they had no longer any pathological significance, and all treatment was suspended. During the following two years, no evidence of syphilis having been manifest, permission to marry was accorded. Child born a year after; mother and

the tissues—for all tissues are supplied with lymphatic spaces or channels—becomes localized in excess at certain given points, this can logically only occur by the obstruction of such channels or spaces. Whether we can yet demonstrate this microscopically or not. It is within the last ten years that even the existence of lymphatic vessels in the most important parts of the body—as, in the eye, in the bones, etc.—has been denied by leading and accepted authorities. But since then it has been proven by Thin. Ludwig, Schweigger-Seidel, and others, that there is not alone a generous supply of lymphatic vessels to the eye and the bones, etc., but even cartilages are abundantly furnished with them. Accepting thus a legitimate deduction from known facts, which furnish logical reasons for the plan and measure of treatment, we may wait hopefully for the microscopical advances which shall scientifically establish our knowledge of the exact mechanism of the late lesions of syphilis.

child healthy—and so continued. Two years subsequent to the birth of the child, and thus six years from the acquirement of syphilis, patient presented with a swelling over the lower portion of the sternum, about the size of half a lemon; quite firm; slightly tender on pressure. First noticed, about half its present size, about a month previous. Diagnosis: *gummy tumor*—a sequel of former syphilis. Treatment: iodide of potassium 8 grs., biniodid. of mercury one sixteenth, three times a day. As the patient was otherwise in good health, nothing further was prescribed. Without any local application, under the above-mentioned treatment, the tumor declined rapidly, and at the end of three months every evidence of it had completely disappeared, and all treatment was discontinued. A little more than ten years have passed, and no further trouble of syphilitic nature has occurred, either to the patient, his wife, or his children, of which latter he has several.

Remarks on Case III.—Claims for the non-contagious character of syphilitic sequelæ, find corroboration in this case. Prompt effects of the specific treatment remove any possible doubt as to syphilitic origin of the trouble. The cessation of treatment on the entire disappearance of the tumor, is in accordance with the usual practice in such cases, but it must not be forgotten that such tumors are likely to return, or that similar accumulations may occur at other points. And while, as in this case, a prolonged immunity may be acquired, even escape from any further syphilitic sequelæ, yet such an accident, indicating failure of treatment during the active stages of syphilis to completely efface the damage then done, must make the patient and his physician anxious and watchful for possible similar developments in other localities. Especially should this be borne in mind when obscure troubles of nutrition or of the motor or sensory apparatus are recognized.

GUMMA OF THE TESTICLE.

CASE IV. J. V., 65; lawyer, in good general health. Presented with an enlargement of the left testicle.

It had a few weeks previously attracted his attention by its weight, and not from any pain in it. The size of the organ, which was ovoid in shape, was four inches in its vertical and three in its horizontal diameter, quite firm and insensitive to the touch. A small amount of fluid was recognized in the tunica vaginalis. There was no history of any urethral disease or any mechanical injury either to the testicle or the surrounding parts; but there was a tolerably clear history of syphilis at the age of 24, viz.: a sore coming on the penis fully three weeks after a suspicious connection, which remained for some time, finally healing under the internal administration of mercury. He married a few years after; had several children; also grandchildren; not one of whom had ever any recognized signs of syphilis. No recognized sign of syphilis had appeared in the patient from the date of the healing of his sore, to the occurrence of the swelling of his testicle, forty years after. The tumor, both as to its accession and its physical characteristics, was like a sequel of syphilis. Freedom from pain, and from irregularities in shape; freely movable under the scrotum: unconnected with any tubercular or cancerous antecedents. About four drams of serum were drawn from the tunica vaginalis and the smooth surface of the tumor, and complete freedom from fluctuation was made more manifest. Treatment by the *mist. biniodid.* internally, was commenced, together with *ung. hydrarg. mit.* externally. Subsidence of the tumor commenced within a fortnight, and at the end of six months the testicle had resumed, nearly or quite, its original size.

Remarks.—The absence of all recognized manifestations of syphilis, as in the foregoing case, is not without precedent. Early constitutional syphilis varies in its intensity as much as any other known disease. The roseola, even if present, may readily escape observation. The papular eruption may be confined to half-a-dozen points, or even a single spot on the body, or a single mucous patch or tubercle, which shall pass away without treatment or recognition, and yet syphilitic sequelæ may

occur, the effects of which may prove as grave as when every phase of the active period presents the typical manifestations. Once recognized as syphilitic, no matter how slight the lesions of the initiatory period or that of general infection, the treatment should be as systematic, as thoroughly considered and carried out, as when well-marked in all respects. It is only in this way that we gain the great security against the occurrence of sequelæ, and if occurring, secure the lightest forms of trouble. Unfortunately, relief from the immediate and appreciable accumulations constituting sequelæ (the so-called gummy tumors of syphilis) does not always mean cure: recurrences, especially of the accumulations in the testes, are not uncommon, as in the following:

CASE V. P. P. S. This patient gave a clear history of the characteristic eruptions of active syphilis occurring twenty years ago. Good health up to five years, when his right testicle became enlarged to the size of his fist. He stated that under occasional treatment of iodide of potassium the testicle grew very much smaller; in fact, he thought his difficulty almost cured, when the swelling returned. On examination, a large quantity of fluid was found in the tunica vaginalis. Four ounces being drawn off, it became evident that the tumor remaining, while not larger than a normal testicle, was irregular in shape—nodulated—especially at the lower portion, where it was of cartilaginous hardness. The upper portion alone was sensitive to pressure. It thus became evident that a fibrous degeneration of the entire inferior portion of the testicle had taken place, and that its secretory structure was almost entirely destroyed; the sensitiveness to pressure indicating the portion which had thus far escaped.

Remarks on Case V.—In the post-mortem examination of similar cases, it is found that two forms of trouble frequently (and always in long-standing cases) unite in the so-called chronic orchitis of late syphilis, the one usually earliest to manifest itself being general infiltration or a localized tumor at one or more

points in the substance of the organ. This accumulation is found to be made up of materials characteristic of the "*gummy tumor*" occurring in other localities. Subsequently to the occurrence of these tumors a marked growth of fibrous tissue is found to take place, *apparently commencing in the lobular spaces*, and gradually encroaching upon the seminal lobules until they are destroyed. The elements of new formation, traversing in this same way the substance of the entire organ with a cicatricial net-work, the contraction which naturally follows often results in the total destruction and almost complete disappearance of the organ. This explains what we find in the present instance. The history points to a general so-called gummy infiltration, involving, probably, the epididymis and the body of the testicle, and a later development of fibrous tissue, which has, by its subsequent contraction, reduced the organ to its present indurated and atrophied condition. It is interesting here to recall the fact, made prominent by all authorities on syphilis, that cicatricial deposit and its subsequent contraction and strangulation of the parenchyma of the testicle, resulting in true atrophy, is characteristic of the influence of late syphilis, and occurs not alone in the testicle, but notably also in the liver and the kidneys. The tendency to formation of fibrous tissue has also been recognized (from apparently the same causes) at other points, as in the larynx, intestine, etc. Ranvier and Cornil significantly remark* that all profound syphilitic lesions of the mucous membrane occasion a proliferation and a production of connective tissue usually much greater than in diseases due to other causes. It is a well ascertained clinical fact that gummy infiltration precedes the stage of cicatricial deposit, and that while both the gummy tumor and cicatricial atrophy, are often met with in the same testicle, general enlargement *first occurs*; then comes the recognition of localized deposits of gummy material, and later, often several years after, compression, due to contraction of

* "Patholog. Histol.," page 399, 1880.

cicatricial deposit, finally takes place, and atrophy of the testicle results. The clinical evidences are strongly in favor of considering the gummy exudation as the *basis* of the cicatricial deposit, and the different subsequent conditions, as but stages of the same pathological process, terminating finally in atrophy, through cicatricial contraction. In favor also of this view, and as affording a possible explanation of the cause and mode of formation of the cicatricial deposits in other organs, due to late syphilis, we may recall the statement of Rindfleisch in regard to the most favorable conditions for the development of new cell formations, namely, "Contact with tissue and *relative rest* of the emigrant cells induces them first to essay their amœboid mobility, and then to division." * But *absolute rest, stasis* of such cells, or of any cells, is necessary for their *development into tissue*. All fibrous or connective tissue is said to be made up of the spindle-shaped or connective-tissue cells and fibrillæ which are simply a higher stage of development of the lymphoid cells and corpuscles, evolved from and circulating in and through the lymphatic organs, spaces, and vessels. This is exactly the essential material of which *cicatricial tissue*, wherever found, is made up, and this is exactly the sort of tissue which has caused the mischief in this testicle, and which by authorities is accepted simply as one of the many mysterious phases of the so-called tertiary period of the disease. Only a single condition is lacking, however, in order to place this cicatricial deposit, due to syphilis, in the line of ordinary pathological conditions, and that is, one which will account satisfactorily for the presence and quantity of embryonal or formative cells in the localities where the cicatricial tissue is subsequently developed, and the causes of their enforced accumulation and stasis in those localities, during a period sufficient for the formation of such tissue.

Ludwig and Thomsa † claim to have demonstrated a

* Rindfleisch, "Path. Hist.," p. 94, sec. 77.

† Stricker, "Human and Comparative Histology," Sydenham ed., vol. 1, p. 311, *et seq.*

very generous distribution of lymphatic channels in the testicle, the liver, and the kidneys, organs in which the cicatricial contraction due to the influence of late syphilis is chiefly found. Especially are the lymphatics claimed to be numerous and ample in the testicle, where injections performed upon dogs have shown that lobular spaces are simply lymph sacs or lacunæ. In point of fact, the seminal lobules are literally inclosed in lymph chambers, and the reticulation of lymph channels not only surrounds, but permeates, every portion of the testicle and its appendages. The same rich distribution is shown also in the liver and kidneys. Having, then, the material necessary for the formation of cicatricial tissue, and in localities where it is known to develop, the essential condition to produce it, is an enforced stasis of cell elements, through interference with the lymph circulation of these organs; in short, *obstruction of the lymph channels* at various points.

GUMMY TUMORS OF THE INTEGUMENT AND CELLULAR TISSUE.

CASE VI. W. W.; 49. Presented three large, sharply cut, apparent ulcerations on the inner aspect of the right leg just below the knee; two about two inches each in diameter, quite circular, and a third about two inches in length, formed by the union of two about an inch in diameter. All had penetrated the integument completely; the surrounding integument was only slightly inflamed. Two small tumors just under the integument on the outer side of the right thigh, movable under the skin, painless, and another nearer the knee, attached to the integument, and distinctly fluctuating. Here were, then, three characteristic stages in the progress of gummy lesions of the integument. There was a clear history of syphilis irregularly treated about fifteen years previously. Alleged occurrence, four or five years previous, of large sores with heavy black scabs upon them, chiefly on the legs and arms, which were cured by iodide of potassium. Cicatrices paler than the surrounding skin were found corroborating the statement.

This patient was in low general condition from dissipation, insufficient nutrition, and bad hygiene. He was given nutritious diet, with cod liver oil. A course of iodide potassium with biniodide hydrarg., the former to be gradually increased by the addition of a grain at a dose, taken largely diluted with milk, up to sixty grains. Under this treatment and care, with local applications of iodoform in powder to the ulcerations, marked improvement at once took place, and in about two months healing of the open lesions was complete, and the tumors were apparently absorbed.

Remarks on Case VI.—As a rule, to which exceptions are rare, the ulcerative forms of syphilitic sequelæ occur in those cases which have either been imperfectly treated or not treated at all in the early active form of the disease. It is also true that, while the gravest accidents *may* occur to those who have had the lightest forms of early manifestations, the destructive sequelæ are *usually* associated with a history of profuse and recurring eruptions in the early stages of the disease. It will be found that whatever the form or locality of the lesion of late syphilis, the ability to assimilate large doses of the iodide of potassium without interfering with the digestion, is a guarantee of rapid benefit from its use. Very great care, then, is necessary to introduce this potent remedy so gradually and so well diluted with milk or some agreeable tonic diluent, that the digestive apparatus may be educated to tolerate the drug. Fortunately, in cases where it is required, iodism rarely occurs in any troublesome degree when sufficient care has been exercised in this respect. The substitution of pure iodine in plain molasses, or with starch, has been previously suggested, when the iodide of potassium is not tolerated.

PSORIASIS OF TONGUE, FOLLOWING SYPHILIS.

CASE. N. M. W.; 30. At 22 had an initial lesion of syphilis, which remained unhealed under local applications up to the fourth month after infection. It was then excised. Healing took place by first intention;

several small mucous patches were then present in the mouth and on the tongue; the superficial lymphatic glands were enlarged and indurated at all usual localities. The patient was put upon pil. duplex (hyd. mass. 2 gr., ferri sulph. exsic. 1 gr.) thrice daily, and this was continued, somewhat irregularly—omitting several times for several weeks, whenever some tenderness of the gums appeared—for a year and a half. No intercurrent lesions during this time. Glands still somewhat enlarged; mist. biniodid. hyd. (potas. Iod. 8 grs., hyd. biniodid. $\frac{1}{16}$), a teaspoonful as a rule thrice daily, but not seldom neglecting it, for the following six months, when no further evidences of syphilis having developed—the patient in excellent health—treatment was suspended. Not the least sign of syphilis for the next four years, when slight soreness of the right side of the tongue appeared, chiefly along the edge. This was attributed to the excessive use of cigarettes, to which the patient was addicted. On ceasing this there was immediate improvement in regard to the soreness, but a pale, thin pellicle, appeared in two spots on the tongue, about the size of a split pea, a thin film along the edge, and a patch of the same, as large as a dime, on the inferior surface of the same side, and all within a few days. The patient was put again upon the biniodide mixture, and took it faithfully for several weeks, making applications locally with a saturated solution of nitrate of silver, every day or two, without any very decided benefit. In point of fact, the spots on the tongue became slightly elevated and whiter, apparently from accumulated epithelium, giving the characteristic appearance of a simple psoriasis of the tongue. An application to these spots with Paquelin's gas cautery; the platinum point at a white heat, was carefully made, and the internal treatment continued. The result was an immediate improvement in the appearance of the spots, and after the second application, about a week after the first, the patches were quite freed from the pellicle. The patch under the tongue was then treated in the same manner, carrying the cauterization as far as possible through the thickness of the pellicle, subse-

quently simply brushing the platinum point quickly over the surface. Altogether, half-a-dozen applications were made in the course of four weeks, at the end of which time there was complete disappearance of the pellicle, and scarcely a trace of the lesion remained. The internal treatment was suspended, and at the end of three months, there was no indication of return of trouble.

LESSON XVIII.

Significance of psoriasis of the tongue, following syphilis; often mistaken for mucous patches of the active stage of syphilis, and when occurring after the first or second year, called chronic mucous patches. All lesions of late syphilis, of the same significance, as to their contagious property. All caused by accumulations of so-called gummy material, or non-contagious lymphatic matter. So-called chronic mucous patches of tongue usually caused by use of tobacco. The authority of M. Fournier, favoring the view of their capacity for contagion. Case quoted by him in illustration. Analysis of M. Fournier's case, and arguments to show its failure in proving the inoculability of late chronic lesions of the tongue, and also from Fournier's work and other valued authorities to show, that no form of syphilitic lesion, is contagious after the fourth year. This position supported by the teachings and experience of M. Fournier, in his work on syphilis and marriage. Marriage proper after a certain period. Strong statements of M. Fournier to this effect. Syphilis constitutes only a temporary bar to marriage. Fournier adduces eighty-seven cases in proof of this. Tertiary lesions shown not to be capable of transmitting syphilis. Exceptions claimed, lacking authentic proof. Fournier's case, cited to prove infection from lesions present after three or four years, inadmissible. Analysis of evidence. Case adduced in rebuttal. Case cited to illustrate sources of error. What is needed is a guide, as to time, when syphilitic patient may be considered free from danger of communicating the disease. Facts and arguments to show that this time, is not necessarily more than three or four years. Sources of error in claiming infection beyond this time. Cases in illustration.

Remarks.—The foregoing case would, I think, be best characterized as a psoriasis, induced by tobacco, causing irritation of a surface predisposed to such action, by the previous occurrence of local syphilitic lesions at this vicinity, during the active period of the disease. It has been in my experience to see quite a number of such cases, with or without superficial ulcerative lesions, and which had been classed, by previous medical attendants, as chronic mucous patches, with the distinct understanding that they possessed the power of communicating syphilis. It should be understood that mucous patches, are simply papules, occurring on mucous membrane, and cannot exist as specific lesions after the active stage of syphilis has passed. It may, I think, be safely stated, that, after the third, and at

farthest after the fourth year, lesions of the mouth of whatever character,—either *superficial glossitis*, which is recognized by oval or circular, small or large patches, or tubercles of thickened sub-mucous cellular tissue; or the *deep glossitis*, which causes a general hyperthropic thickening,—are due to accumulations of gummy material, so-called; and, whether accompanied by ulcerations, superficial or deep, are of the same nature as all the other lesions of so-called tertiary or late syphilis, which have been incontestably proven to be free from the contagium of syphilis. The occurrence of superficial erosions of the tongue, from a few to many years after the termination of the active stage of syphilis, is not infrequent. The habitual excessive use of tobacco, has seemed to me more likely to produce superficial ulcerative lesions, than where syphilis has not been experienced, especially where the lesions of the active disease have occurred in the mouth. Often, in such cases, simple abstinence from tobacco, will cause such ulcerations to heal, without further trouble. In other cases, the iodide of potassium acts quickly to relieve, but, in all, the apprehension of communicating syphilis is an ever-present horror, and when, as is sometimes the case, such ulcerations, either from vices in the digestive processes, or from permanent cicatricial disturbances of the affected tissues, continue for years, the condition of such patients is sometimes, indeed, pitiable. It is true that we have the weight of an authority, so great as M. Fournier, in support of the *possibility*, nay, the probability, of infection of syphilis for many years, or, indeed, indefinitely in such cases, as is shown in the following, quoted from his popular work on “Syphilis and Marriage.” * “These lesions are always superficial, limited, and mild. They are readily cured by cauterization, aided by some local care; but they are only cured to be reproduced,—to renew themselves incessantly. In themselves they are of

* “Syphilis et Mariage.” Leçons Professées à l'Hopital Saint Louis. Par Alfred Fournier, Professeur à la Faculté de Médecine de Paris, Médecin de l'Hopital Saint Louis, Membre de l'Académie de Médecine. Paris, 1880. Page 122.

no importance, but they become only the more dangerous in respect to contagion. Such, for example, is the case of a patient whom I treated some time ago. This young man had been infected with a syphilis, five years before, which one could fairly call mild, since the initial chancre was only followed by a roseola, a palmar syphilide of slight intensity, and a sore throat. He treated it almost from the beginning sufficiently well; several times he submitted, under my advice, to a strong mercurialization (15 to 20 centigrammes of proto-iodide daily). Well, in spite of this treatment, and in spite of all my efforts, the patient (who, by the way, is a smoker: a circumstance essential to note) has not ceased to be affected, *during a period of five years*, with lingual syphilides *almost continuously*. I cured him of one breaking out; one or two months later a new one attacked the tongue; then came a new treatment, followed by a new cure; then reappearance of the malady, and so on. To be brief, I always cured him, and 'it always began again,' to use his own expression. Now that he has completely given up tobacco, at my earnest solicitation, the eruptions become less frequent, but have not altogether ceased; and quite lately I have again seen him with syphilis coming on the back part of his tongue. Now, what would have happened if, relying on the mild nature of his disease, and satisfied as to the treatment followed, I had allowed the patient to marry between the two outbreaks of such symptoms? What would have happened, I need not predict theoretically, because I have had a practical demonstration. This young man took as a mistress, last year, a woman who, till then, was perfectly healthy: exempt from every venereal symptom. Some weeks later he brought her to me, affected by an indurated labial chancre, manifestly received from the lingual syphilides of the patient."

This case is presented as a typical one, to illustrate the possible persistence of contagious lesions after many years, notwithstanding the disease is of mild form, and has been systematically, persistently, and efficiently treated from "almost from the beginning."

It will at once be seen, that, as such lesions of the mouth may appear, several years after the apparent cure of syphilis, no real guarantee against the danger of communicating syphilis, for a very long period of years, can ever be given, and if such guarantee cannot be given, *no man, it appears to me, has ever a right to advise, or even to consent to, marriage of a person who has once had syphilis.* It becomes a matter of vital importance to know, whether or not, there is a form of late lesion of syphilis, which, unlike all other late lesions, still retains the power of infection. M. Cornil says (p. 34, Am. ed. 1882): "*The inoculations made by Diday render it probable that the tertiary lesions are not inoculable, and consequently not contagious.*" Bumstead & Taylor (ed., 1879, p. 443): "*Hence we consider the blood and the secretions in tertiary syphilis innocuous.*" Hill & Cooper (London, 1881, p. 11), say: "*All attempts to propagate the disease with secretions taken at this period have failed.*" Baumler says of the cessation of the inoculable stage of syphilis: "*This takes place in the majority of cases, and at the expiration of eighteen months or two years the infection is entirely exhausted.*" (Ziemssens's "Encyclopædia," Am. edition).

The most complete and irrefragable evidence, in favor of the view that the injective power of syphilis is self-limited, and does not extend over a period of more than three or four years, is that presented by M. Fournier, in his recent work on "Syphilis and Marriage," adduced to justify his previous statement of opinion, that persons having had syphilis *under certain circumstances may marry.* The statement, a very strong one, appears on page 18 of his work, thus: "Then, yes; a hundred times, yes: one may marry after having had syphilis, and the results of such a marriage, contracted under these conditions, may end absolutely happily, medically speaking. This I affirm, and fearlessly proclaim from the house-tops, after having conscientiously studied this grave question, both clinically and socially, and after having religiously consulted numbers of observations of my own and others. It is for me an absolute fact, an undeniable truth;" and at page

15, *ibid.*: "The truth is that, with some very rare exceptions, syphilis only constitutes a temporary bar to marriage." In support of this positive opinion he says,* "For my part alone, I have in my hands, to speak only of written facts, eighty-seven observations relative to syphilitic subjects, undoubtedly syphilitic, who, having married, *have never communicated to their wives the least suspicious phenomenon; and, moreover,* these eighty-seven have produced among them a total of one hundred and fifty-six *absolutely healthy* children."

In examining the clinical records of these eighty-seven cases, given at page 231, *et seq.*, of his work, we find that thirty-six out of this number of men who were thus proven free from any power to transmit syphilis, either by direct contact or by heredity, were subjects of late or tertiary lesions of syphilis *after marriage*—some before and some after the birth of children.

These lesions comprise almost all the accidents of late syphilis, thus: gumma of penis, palmar psoriasis, dry tubercular syphilide, gumma of velum paluli, cerebral syphilis, papulo-tubercular syphilide, and costal periostosis, cerebro-spinal symptoms (evidently of specific origin), diplopia, passing attacks of hemiplegia, nasal syphilides, ecthyma of legs, specific tibial periostitis and glossitis, specific sarcocoelele, nasal ulcers, ulcerative laryngitis, papulo-squamous palmar and plantar syphilides, sclerous glossitis, papulo-scabby syphilides of circinate form, tubercular ulceration, syphilide of nose.

This would appear to be sufficient evidence that M. Fournier, presenting these cases to show that they lacked entirely the contagious element, was a firm believer in the non-transmissibility of syphilis from late lesions.

Another case, quite in line of the first case cited—which seemed to prove indefinite capacity for infection, appears inadvertently to have slipped into M. Fournier's 87 cases. This is Case XLIX. (p. 237 *ibid.*). Thus runs the clinical history: "Hard chancre, roseola palmar, psoriasis, syphilides of the mouth; iodide treatment; no mercury. Married four years after infection; wife remained free;

* Fournier, "Syphillis et Mariage." *Ibid.*, p. 16, also p. 231.

two healthy children. *After the birth of the second child the husband infected the wife through a syphilide of the mouth; pregnancy the following year, which ended in a miscarriage.*"

Lacking any other explanation from M. Fournier, this case would, then, appear to be, like the first case presented, one where a late lesion of the mouth had communicated syphilis, and this at least seven years after the original infection, and even after several years of marriage, during which the wife had escaped, and two healthy children had been born. Exceptions of such vital importance—the first cited as a typical exception, and the second supporting it with great force—in order to be accepted, should, it appears to me, be quite free from reasonable doubt, on all essential points. Let us examine them as critically as these meagre details will permit.

In the first case, after a mild and thoroughly treated syphilis, in a patient who was an inveterate smoker, lesions of the mouth recurred constantly, for a period of five years, influenced only temporarily by treatment—promptly benefited by leaving off his tobacco. Physician (M. Fournier) fears that this lesion is an exception to the lesions of syphilis which occur at so late a period.

M. Fournier's experience in regard to inoculability, at so late a period, are given in his work, as at p. 101, where he says: "In those cases where I have seen syphilis pass directly from the father to the child, without contamination of the mother, *I have always* observed, that the paternal infection, was of a comparatively recent date, that is to say, *had* not exceeded the maximum of *three or four years*. Beyond that time I have *never* firmly established the transmission of syphilis by paternal heredity."* Again at page 132: "A patient comes to us in the full secondary period, and we submit him to the usual treatment. Now, what occurs, nineteen times out of twenty at least? First, that the patient is subjected for some months—even for the first year—to secondary eruptions, more or less numerous, more or less

* Italics my own. F. N. O.

intense, corresponding to the quality of the diathesis, but generally mitigated and lessened by treatment. And beyond—from about the second year—these eruptions continue to decrease . . . Then, still later, the lessening is more marked, or becomes complete with the third, or, later, with the fourth year. From that time, the secondary period is done, and, with it, the contagious accidents which accompany it, and which constitute the principal dangers of marriage. Such is the rule: that this rule has exceptions I know but only too well; and I have already given examples of such exceptions" (p. 122 *ibid.*), [case above cited]. In this case a young man takes a mistress, who some weeks later presents with an initial lesion of the lip. The conclusion appears to have been promptly arrived at on the following basis, *viz.*: *possibility* of contagion from patient's buccal erosions, (which did not yield to anti-syphilitic treatment, but which did improve when tobacco was withheld): *probability* that the mistress acquired her labial chancre from the secretion of this very exceptional kind of syphilitic lesion, if it was syphilitic.

Now, is such a conclusion sufficiently warranted by this evidence, on a matter of such moment? Let us look at other causes, equally possible, equally probable. The young man did not take for a mistress, a woman whose virtue was above suspicion. Such a coincidence as the contact of such a woman's lip, with some other lip, with fresher syphilitic lesions, would not be so extraordinary, as the acquirement of syphilis, from a buccal lesion, *five years after infection*. Such a woman, would be quite in line of coming in contact with persons having active syphilis, and, either directly or by mediate contagion, might have acquired her labial chancre, even if she had not become this man's mistress, without exciting especial comment.

Let me here place in contrast to this, a case taken from my own experience. A young man had undoubted syphilis—characteristic initial lesion, general gland enlargement, roseola; no pronounced papular eruption; mucous patches on tongue and inner surface of cheeks. After a somewhat desultory treatment of two years,

he was apparently cured. Remained well for two years; began to have ulcerations at side of tongue, thin pearl-colored at edges; characteristic appearance of the so-called chronic mucous patch; was greatly addicted to tobacco—tongue resisted local treatment, unless accompanied by exclusion of tobacco; repeated recurrences for nearly five years; not markedly affected by specific treatment, which was tried from time to time. At last he married a virtuous girl, since when already two years have elapsed, and she has not yet acquired syphilis.

In regard to M. Fournier's second case: this is rendered especially remarkable, by the fact, that, besides the alleged acquirement of syphilis, by the wife, from a buccal syphilide in the husband seven years after infection, that without any specific treatment, the wife remained free from syphilis during the early years of marriage, and, besides, gave birth to two healthy children during this period. The acquirement of syphilis, from other and unsuspected source, would be much more in accordance with the probabilities of this case, than that this most extraordinary development of active syphilis, upon a diathesis which had slumbered through the initiation and development of two healthy children, should break out finally in infective buccal lesion. The theory of re-acquirement of syphilis, from a fresh source, is not so difficult to accept.

The experience and teaching of all the leading authorities, to-day, are against the acceptance of any claim for inoculability of the secretions of syphilitic sequelæ, and any cases, militating against this view, should be free from suspicion of imperfect observation, imperfect facilities for observation, and from conclusions not based upon thoroughly well-authenticated facts.

Case — on page — will show how easily active syphilis in a wife may appear to have been acquired from a husband who had had syphilis many years previously—and yet, against all presumptive evidence, she may be finally shown to have acquired the disease in a manner more in accordance with all that is now positively known of the disease. The evidence in favor of the innocence of

M. Fournier's females was no greater than in my case, and yet the latter was proven guilty out of her own mouth.

What the profession needs now, more than anything else, is some reliable guide towards the formation of an opinion, as to the time it is necessary to treat syphilis, before the patient may be considered free from the danger of communicating the disease to others. It would seem probable, that an explanation of the course pursued in M. Fournier's 87 cases might afford light on this matter. In point of time we find that the average time of marriage in the 87 cases was $5\frac{8}{10}$ years, that 25 per cent were married within three years after infection, and over 10 per cent within two years. In regard to the length and quality of treatment: over 12 per cent of the 87 cases had a treatment of less than a year's duration, several with only a few months, one with the iodide of potass. only, and another with no treatment at all (marriage seven years after infection). It would appear, then, that the contagious element of syphilis is not necessarily dependent upon *treatment* for its eradication. This would confirm the claim made in the earlier pages of this work, that syphilis, in its contagious phase, is self-limited, and that the value of a prolonged and systematic treatment, consists chiefly, in its power to prevent that damage to the tissues and organs of the body, which may finally eventuate in important lesions in after years, viz., the *sequelæ* of syphilis in their various forms. The time during which the treatment should be continued should certainly cover all that period, during which the affected organism contains any contagious element. This question must be settled by clinical observation. If we find that there are well-authenticated cases of communication of the disease, after many years, *without re-infection*,* and that we cannot tell by the degree or quality of the syphilis, what cases may behave in this manner, we are then assuming unwarranted responsibility, in allowing any persons with syphilitic antecedents to marry. If, however, we can find by strict scrutiny

* For facts and arguments showing that re-infection of syphilis is not infrequent, see Cornil on Syphilis, Am. ed.: Henry C. Lea's Son, Phil., 1882, p. 19.

that such cases are not only very rare, but are not well proven, we are then justified in assuming the known facts, as ascertained by the experience of the best observers, as a basis for our decision. For instance, in the great and well-considered experience of M. Fournier we find the following statement (p. 101 *ibid.*):

"In those where I have seen syphilis pass directly from the father to the child without contamination of the mother, I have observed, that paternal infection, was of comparatively recent date, that is to say, that *it had not exceeded the maximum of three or four years*. Above that term, *never* have I firmly established the transmission of syphilis by paternal heredity." Again (p. 101 *ibid.*): "If not always, at least in the enormous majority of cases, the husbands who communicate syphilis to their wives, are those who have married *with a syphilis still young*: that is to say, with a syphilis which *does not date back more than a few months or a year, perhaps two: more rarely three or four*." It is in regard to such points, that the profession need exact observation and information. While we are prepared to accord much value to such statements as the foregoing, from so valued an authority, and to accept them as aids to judgment, to be rendered in practice: we are left in some doubt on account of the mode of expression used. "If not always," *intimates* that M. Fournier has seen cases where husbands have communicated disease when the disease was not recent: that is to say, within four years. He does not cite a well-authenticated case in his own experience. In more than thirty years' experience I have never seen such a case, nor any account of one, which would, with fair scrutiny, warrant the claim that it was well authenticated. The time of treatment of the active stage of syphilis, is a most important one, for the profession to be agreed upon. As to the means and mode they are quite in accord. It may be safely said that all authorities are also agreed, that the treatment should be persevered in, as long as any tangible or appreciable evidences of the disease remain. In America, the steady, gentle mercurial course, continuing throughout the usual period of active manifestations, and not less

than one year, is usually insisted on, and this followed with the so-called mixed treatment (mist. biniodid. or its equivalent) for from one to two years longer: the same course also insisted on, no matter how late in the actual period the treatment is begun. The practice in Great Britain is, I believe, much the same. M. Fournier, who is the leading authority in France to-day, insists upon the same but a longer treatment. Four years he puts down as the minimum. He says (page 102): "Three to four years—such is, according to my view, the MINIMUM [note well the word if you please], the indispensable minimum, in order that the diathesis may sufficiently disappear, under the double influence of time and treatment, and that the patient, returning to a healthy position, may have the right to aspire to the titles of husband, father, and head of a family."

M. Fournier is somewhat peculiar in his mode of administration of the mercurial: proceeding by periods of activity and repose—giving it for a month or two, and then omitting for about the same period. It will thus be seen, that, practically, he administers little if any more of the mercurial, than we, who administer the drug at the point of easy toleration, throughout the whole of the active period. For the settlement of questions so important as those which have been briefly touched upon in the foregoing pages, it is essential that those especially interested in, and familiar with, syphilis in its various forms, in its relation to scientific medicine and to humanity, should record with scrupulous care all *unquestionable* facts, concerning the duration of syphilis as an active contagious disease. That cases, proving disputed points or disproving them, should, when thoroughly satisfied with their value and susceptibility of proof, be forwarded to some convenient medical journal. Let an invitation be extended to those interested, to add a case in point, an opinion, or an analysis which might tend to strengthen facts, or expose errors of diagnosis, or imperfect observation. In this way, I believe, it need not be very long, before the great questions as to the duration of the period of possible communication of syphilis, would be narrowed down to such a point, at

least, that the subject of syphilis, might, within a reasonable number of years—say three or four, or even five—at least, resume his ordinary association with his kind, without the ever-present dread of communicating syphilis, from an ever possibly recurring, periodically active, mucous patch. Prolonged existence of the contagious element in the seminal fluid, though a series of years, has been claimed, and instances have been cited, with great appearance of truth. M. Fournier quotes one related by M. Jonathan Hutchinson: “Thus a medical man contracted syphilis and for about six months treated himself. Believing himself cured and being relieved of all pain, three or four years later he married. *His wife remained healthy*, and became *enciente* eleven times. First pregnancy, child born dead; second pregnancy, child born dead; third pregnancy, child born alive, but syphilitic, and dying with the usual symptoms of hereditary syphilis; fourth pregnancy, child born living, but syphilitic and dying also with syphilis. On the contrary, the seven last children, although born syphilitic, resisted the disease and lived.”

Here is a case of a healthy woman, giving birth to a series of children claimed to be syphilitic. In order to make this case of value, the evidence must be fuller and more explicit. The simple death of the child, is not sufficient evidence of syphilis; repeated miscarriages are not necessarily from syphilitic influence; and in case of the third and fourth children, we are not informed as to exactly what constituted the evidences of hereditary syphilis. Various forms of imperfect development, and apparent disease of the foetus, result from scrofulous taint, from hereditary diseases not syphilitic, and from disease of and impressions on the female generative organs, and these propagated through successive pregnancies. Eruptions, termed *scrofulides*, occur in the newly-born that are, sometimes, absolutely identical in appearance with those of syphilis. Cases of the character of the foregoing, may be true as far as the attainable evidence goes, but they must remain as doubtful, when the history is imperfect—because they are opposed to all that is known, with any certainty, of the nature of the disease.

The man, after four or five years, with no appreciable disease, infects children, *while the mother remains healthy*. According to the results of M. Mireur's experiments in inoculating healthy subjects, with the semen of syphilitic men, in the active stage of the disease, *the semen does not possess the contagious property*. M. Fournier says, ("Syphilis et Mariage," p. 26, note):

"It has long since been established that *the semen of a syphilitic subject is not susceptible of transmitting contagion*." If this be the fact, how, then, could the children be contaminated by the husband, independently of any disease of the wife—who, it is claimed, *remained healthy*? It is certainly the fact, that, with the exception of some rare and anomalous cases (such as the one quoted), the weight of the evidence of every authority has been given, in favor of a gradual diminution of the contagious element in syphilis, and its complete disappearance within three or four years. Under the influence of the old views that the later lesions—the sequelæ—were also capable of transmitting syphilis, it was difficult to set a limit to the time, when a man could be said to be free from danger of communicating the disease, but as it has now been satisfactorily proved, that the active stage of the disease, does not as a rule exist more than three or four years, and that the secretions of the sequelæ and the blood are free from the contagious element, apparent exceptions to this law must be accepted as proved, only after the most rigid scrutiny, and refused admission, except on absolute proof.

Note.—In the spring of 1860, and thus over twenty years ago, I was called to see an infant about a year old, the daughter of a prominent merchant, a most upright and religious man. The child had been vaccinated some three months previously without any unusual local result. About a month afterward a rose-colored eruption made its appearance, and, while fading somewhat, it remained, and began to create some apprehension lest it had resulted from an impure vaccine virus. When I saw the child, the eruption was exactly like that of a fading syphilitic roseola, slightly red, and inclining to a coppery hue, chiefly well-marked on forehead and cheeks.

breast back and abdomen. The date of its appearance, following vaccination, suggested syphilis, also its color, first rosy, then inclining to a coppery hue. I communicated my suspicion to the father and at the same time inquired into his venereal antecedents. He acknowledged to a gonorrhœa in early youth, which had caused him much remorse, but he denied knowledge of any syphilitic lesion. The wife was apparently in good health. There were three healthy children older than the little girl. The physician who performed the vaccination, stated its source, which was unobjectionable, and stated, also, that he had vaccinated at least a dozen children with the same virus as that used on this little patient, without any sign of such trouble following. Having scarcely a doubt of the syphilitic character of the eruption, I put the child on a systematic mercurial treatment; this was continued for six months, without any especial change. I then called in the late Dr. Bumstead, (my predecessor in the Chair of Venereal Diseases in the College of Physicians and Surgeons, N. Y.) in consultation. My previous diagnosis was confirmed, unhesitatingly, and, for another six months, the same treatment was continued. Not yet making any impression on the eruption—the child otherwise in excellent condition—Dr. Wm. H. Draper, who then occupied the Chair of Cutaneous Diseases in the College of Physicians and Surgeons, was then called in consultation. The case was accepted as most singular, but previous diagnosis, after careful consideration, was again confirmed, and, for another six months, the treatment was rigidly enforced, at the end of which time I took the responsibility of stopping the mercurial, as, up to that time, apparently, no benefit had accrued from its use. I then tried a mild arsenical preparation for a few months, with equal ill success, the eruption still remaining distinct and coppery in all regions previously occupied by it. During the next *ten* years the child grew fairly well. She was somewhat delicate, and of a nervous, lymphatic temperament, and occasionally received a little aid to her nutrition, such as might be afforded by extract of malt, cod liver oil, etc. My attention at this time (when the child was now over twelve years of age) was

called to several *exostoses* on the radius and ulna, both at the distal and proximal extremities on the inner aspect, also on the outer and inner sides of the head of the tibiæ. This seemed to confirm the original diagnosis, which I had long previously abandoned. I was contemplating a renewal of the treatment, adapted to the later stage of syphilis, when it occurred to me to call in Dr. A. Jacobi, then Professor of the Diseases of Children of the College of Physicians and Surgeons. The eruption was somewhat faded, but still distinct, on the cheeks, forehead, and breast, especially well-marked during any excitement, mental or physical. Professor Jacobi expressed an opinion against the idea of syphilis, and considered the eruption a *scrofulide*, and the exostoses *rachitic*. This fully explained the anomalous case of syphilis, as it had been supposed to be, and was then accepted, as rachitic, and was subsequently treated by me, in accordance with this view. The family leaving New York, soon after went to reside in a neighboring city. Here, after consultation with the new family physician, the patient underwent another course of mercury, and this time with iodide of potassium for many months, and finally, having about a year since become quite lame from the growth of the extoses, and their interference with muscular action, a distinguished surgeon from New York was called in consultation, to see if any surgical aid could be afforded. A brother of the patient called on me a few months since to say that my old view of the case had turned out to be correct, and that no surgical aid was thought advisable, but the young lady *had been put on a thorough course of mercury and the iodide of potassium.*" During the several years which had intervened, since the case had been previously considered one of syphilis, the change of opinion had been lost sight of. Meeting the surgeon soon after his examination of the case, I recited the patient's former history which had not been made at all clear in the later consultations; since this time I have had reason to believe that the anti-syphilitic treatment has been again suspended.

The father of the young lady whose history has been

given above—after apparent proof that the vaccination was not at fault—became morbidly remorseful on account of his early gonorrhœa. The later consultations were influenced, by a statement of the sons, that their father, just before his death, some years before, had given them to understand, that he had transmitted the disease to their sister through a youthful folly.

It may be safely stated that the diagnosis of syphilis has often been made, on much more slender ground than in the foregoing case, and the source of infection accepted, not because there was any reasonable proof, but because it was not positively accounted for in any other way. The mere suspicion of an attack of syphilis in a man's youth, in the minds of many physicians, appears to warrant the assumption of an ever-present contagious element, and to account for any and every obscure trouble, which may afflict himself, his wife, or his children, to the end of life.

LESSON XIX.

GUMMY TUMOR OF BONE—LOSS OF SUBSTANCE WITHOUT CARIES.

Clinical case in illustration. Facts showing that the disease is local in its nature. The *dry caries* of Virchow due, like all tertiary lesions of syphilis, to mechanical causes. No *contagium* ever discovered in them. Lesions like those in case cited due to pressure from accumulation of lymphatic material. Similarity between the behavior of so-called *dry caries* and the tubercular syphilide. Van Buren and Keyes's explanation of the latter. Clinical case illustrative of the lesion termed Syphilitic Dactylitis. Behavior of this lesion shown to be identical with that of the so called dry caries, and due to similar causes.

CASE VII. B. W. F.; aged 70; merchant. General health always good. Came complaining of the annoyance caused by two painless ulcers, about the size of a quarter-dollar, just above each frontal prominence. The edges were abrupt and sharp; the entire integument was penetrated, and the floor of the ulcers was covered with large florid granulations. These lesions were said to have appeared about six months previously, very soon attaining their present dimensions, and continuing quite stationary, in spite of many sorts of local application recommended by the family physician. As the patient's general health was perfect, no internal treatment had been resorted to. The gentleman was quite bald, and on examination, several depressed portions of the scalp were recognized, of about the same dimensions as the ulcers. It was evident, to the touch, that there had been a distinct sinking of the bone. This was uniform and to the depth of about one line; the scalp was smooth and movable at these points. In point of fact, the evidence of a former, so-called, *dry caries*, was incontestable. All had occurred within the year, or rather they had only attracted attention during that time. Throughout their course were not recognizable by the patient, from any discomfort or sensation of any sort experienced by him. A course of potass. iodide and biniodid. hyd. (mist. biniodid. hydrarg.) was prescribed.

under which, within the following month, the sores healed perfectly, with a firm cicatrix, scarcely at all depressed.

Remarks.—The foregoing case has an special value, in the fact, that the bone lesion, the “dry caries” of Virchow, is specific; that is to say, it is seen only as a sequel of syphilis, and is reliably diagnostic of that disease. Furthermore, it enables us to understand, better than any other sequel of syphilis, that the processes which result in destruction of tissue, of every variety of tertiary lesion or sequelæ, are not due to any destructive principle, or virus, circulating in the blood, but are due to mechanical obstructions of lymph vessels, through damage to such vessels or channels, during the early active stages of the disease. It is conceded by all scientific authority, that the late lesions, the sequelæ of syphilis, without exception, are characterized by a localized accumulation of the so-called gummy material. It is found in every so-called tertiary lesion, and in amount, sufficient to account for the damage associated with it, on purely mechanical principles. Pressure on vessels of nutrition results in loss of tissue through fatty degeneration, locally and in the parts distant, to which such vessels are distributed, obstruction of the adventitia of blood-vessels, resulting in pressure upon such vessels, is recognized as a cause of obliteration of their lumen. This gummy material has been proved not to differ, in the least degree, from accumulated normal lymphatic material. No contagium of syphilis has ever been detected in it. In the tubercular eruption this accumulation of gummous material, so called, is often absorbed, leaving cicatricial depressions, which are characteristic, without suppuration. It is recognized as resulting from pressure upon the tissue into which it is infiltrated, or in which it accumulates, causing absorption of the tissue. When the gummy material is taken up, the cicatricial depressions result.* Applying the same explanation to lesions

* “The syphilitic tubercle is due to a diffuse hyperplasia of small cells in the substance of the true skin. These cells, which partake of the nature of the so-called gummy exudation, grow at the expense of the

of bone, like those designated the *dry caries of syphilis*, it will be seen that gummy accumulations in bone may follow the same course, and that the so-called *dry caries* is not a true caries at all, for there can never be caries without suppuration. The fact becomes evident, that the loss of bony material, which results in the depression, is caused through absorption of the bony material through pressure by the accumulated gummy deposit. Not producing suppuration or caries, but, by pressure, causing absorption of the bony structure without inflammation, without suppuration, without caries. In this way, and in this way alone, can cases of so-called dry caries, initiated without inflammation, progressing to well-recognized loss of bone structure, without suppuration, or caries, be satisfactorily accounted for.

SYPHILITIC DACTYLITIS.

G. B. W., printer, 45 years old; tall, delicate; has never been strong; supposed himself of scrofulous diathesis, as his mother was affected with a "salt rheum." In 1860 had an injury of the left leg which developed an indolent ulcer. From long-standing at his business this continued open, during six years, and was known, and treated from time to time, as the "printer's sore leg." Became an editor, and thus, relieved from necessity of standing, the ulcer healed. After this, occasionally took sarsaparilla, iodide of potass., etc., for his supposed scrofulous diathesis. Remembers to have had dull pains in his muscles, and also in bones: had also slight pain in fingers of right hand. These pains were relieved by application of tr. of iodine. Never had any evidence of an initial lesion of syphilis, or any

natural tissues, and cause the atrophy of more or less of the substance of the latter, even while there is apparently a hypertrophy, as evidenced by the little tumor called a tubercle. When, however, the adventitious newly formed cells go into atrophy, and are absorbed during the progress of the eruptions, then, not only does the tubercular prominence disappear, but the scar left attests the atrophy and absorption of the true elements of the skin tissue, which took place during the deposit of the morbid material."—Van Buren and Keyes on "Genito-Urinary Diseases with Syphilis," p. 583. D. Appleton & Co., New York, 1874.

sore on any part of his body which was suspected to be such. Pain in his fingers first noticed about two years ago. Injured his fingers slightly, and swelling began. This was treated by local application of tr. iodine, but it continued, and after a few months the finger became distorted in shape, and appeared shorter than before. Middle finger of opposite hand then began to swell, like the first, without special pain. Physicians who examined him, attributed his difficulties to scrofula, and for several months he took hydriodic acid, cod-liver oil, etc. General health much improved but local trouble remained. Careful questioning failed to elicit evidence of any lesion of acute syphilis. A deeply copper-colored scar was found on the site of the chronic ulcer of the leg, previously described. The middle finger of either hand was swollen at the second joint. That of the right hand was slightly bent towards the forefinger, and shorter than the left by fully half an inch; slight crepitation and slight tenderness on pressure; increased mobility at the joint, which was evidently due to loss of bony tissue, chiefly in the distal end of the second phalanx. The second joint of the middle finger of the left hand was swollen, slightly sensitive on pressure; this trouble was comparatively recent, having occurred within three or four months. The characteristics of the bony lesions in this case were distinctly those of *dactylitis syphilitica*, and yet there was no syphilitic history to be obtained. The patient then remarked that he had a small sore on his back, which had been bothering him slightly, for several weeks. Examination showed a sharply cut ulceration, about the size of a silver half-dollar, extending through the thickness of the skin, perfectly characteristic of a late syphilitic ulcer, due to breaking down of a gummy infiltration or accumulation. This settled the diagnosis beyond a question, and the patient was at once put upon an anti-syphilitic treatment. Iodide of potassium in even three or four grain doses caused gastric irritability. Iodoform, which had been previously well borne, was resumed, 1 gr. (Warner's pills) thrice daily, and $\frac{1}{4}$ gr. of the protoiodide of mercury; also mercurial fumigations, twice week-

ly. This was continued for a month, with some appreciable benefit, and especially to the sore on the back. This, treated locally with iodoform, had entirely healed, when the patient began to complain of tenderness of his gums. Fumigations were omitted. The patient was not seen again until March 3, 1883. The pills of iodoform and proto-iodide of mercury had then been taken, twice daily (a third pill always causing digestive discomfort), for fully fifteen months. The second joint of the right middle finger, previously affected, was now apparently normal in every respect. That of the right, was free from tenderness, or any sign of inflammatory trouble, and was also reduced in size. The mobility was much increased. The first and second phalanges appeared atrophied and shortened as in the accompanying sketch. There was no longer any evidence of present diseased action, and discontinuance of specific treatment was advised.

Remarks.—Notwithstanding the failure to obtain any proof of acquirement of syphilis in this case, the peculiar history, appearance, and nature of the deformity of the fingers, made its syphilitic origin almost a certainty. The presence of a characteristic late syphilitic ulcer set the question, if one could have been raised, perfectly at rest. Ordinarily, a full course of treatment suitable for late syphilitic lesions, viz., small doses of mercury and gradually increasing doses of iodide of potassium would have been employed, but the idiosyncrasy of the patient prevented. And yet under the mild continuous use of iodoform and proto-iodide of mercury the case went on without discomfort, to complete recovery in the right, and the same (leaving only deformity from previous bony loss) in the left.

The nature of the lesion in this case, is almost, if not precisely, identical with that of the former one, in which the so-called dry caries—loss of bone without necrosis—was present. It has been shown to be due to accumulations of germinal material (gummy deposits) in and around the joints. Absorption of bony material causes the final deformity, and this is brought about by pressure from purely mechanical conditions. A full and most

admirable account of *dactylitis syphilitica* may be found in Bumstead & Taylor on Venereal Diseases, (Phila., 1879,) p. 671, *et seq.* On p. 675 they remark: "These bony swellings may remain in an indolent condition for along time, and finally the gummy deposit may be absorbed, or it may soften and be discharged through asinus. . . . *The absorption of the bone is unaccompanied by ulceration of the soft parts*" (p. 576).

In the excellent work on Genito-Urinary Diseases with Syphilis, by Van Buren & Keyes, (N. Y., 1874,) page 625, they say of such cases: "Appearances similar to those found in *dry caries* have been encountered in the affected phalanges after death. The gummy deposit, after producing great swelling of bone by its infiltration, *undergoes absorption without ulceration*, as in *dry caries*, and results in loss of substance of the bone, which is not replaced by new tissue. If very rapidly formed, the gummy deposit may undoubtedly break down and be eliminated externally."

It is immaterial in regard to treatment, whether the so-called gummy deposit is in the bone structure, in the fibrous or cartilagenous structures, or in the adjacent soft parts: wherever it is imprisoned, so as to produce mechanical pressure, the parts must yield sooner or later, either slowly, through absorption, or setting up an inflammatory process, more or less acute, cause death of tissue. The same behavior of the so-called gummy material will be recognized in every kind of late or tertiary lesion (syphilitic sequelæ), viz., absorption of unyielding surrounding structures from mechanical pressure, or inflammation and suppuration necrosis through direct mechanical injury, or indirectly through destruction or impairment of vessels of nutrition.

LESSON XX.

SYPHILITIC SEQUELÆ INVOLVING NASAL BONES, VOMER
AND VAULT OF THE HARD PALATE.

Clinical case in illustration. Treatment by internal remedies. Slow progress through this agency. Final cure without deformity. Second case treated by mechanical removal of necrosed bone. Operated on through nasal orifices by means of the dental engine. Prompt recovery. Syphilitic necrosis a local disease. Early removal of dead bone advisable. Recovery usually as prompt as when the disease results from other causes than syphilis.

B. W.; 37. Syphilitic history: active stage three years previous; irregularly treated for about a year, during which he had a sparse papular eruption lasting a couple of months, also ulcers in the mouth and throat at the same time. Since then, had no evidence of syphilitic trouble, until about three months previous, when he began to have slight pain in his nose with some nasal catarrh. This continued to annoy him, the discharge increasing, and finally tinged with blood, and at times quite fœtid; tenderness over the nasal bones also increased, and a redness appeared, with increased soreness. Had been under care of physician, who gave him internally some iodide of potassium, and a wash to use. This dissipated the odor, but the soreness increasing he concluded to seek other aid. Examination showed the nostrils filled with hard black scabs; odor fœtid. Probe introduced strikes loose bone; a flat ragged piece about the size of a half-dime removed; quite extensive surface of dead bone recognized, but no more could be removed. Patient put upon mist. biniodid., 1 teaspoonful thrice daily. Besides this, iodid. of potass., increasing one grain at each dose up to sixty, largely diluted with milk; permanganate of potassium, two grains to water an ounce, to be used through a syringe in cleansing and deodorizing the parts. Subsequently, several pieces of turbinated bone came away and also several pieces of the nasal bones. As soon as any portion was found loose it was carefully eliminated; medicines faith-

fully used; potass. iodid. up to ʒi . three times a day, but it was nearly three months before the necrosed bone ceased to separate, and the discharge to lose its characteristic foetor, and finally to cease. Fortunately, the destruction was not sufficient to produce any external deformity, and the case was claimed as showing peculiarly satisfactory results of treatment.

CASE II. W. G. H.; aged 17. History of active syphilis, under care of Dr. Leving, of London. A little over two years, after began to suffer with foetid nasal catarrh. Was said to have been treated by Mr. Walter Coulson, of London, with iodide of potass., etc.; Trouble continued increasing, when he presented to me early in Jan., 1880. Necrosis extensive and was evidently progressing; discharge profuse; odor foetid. Probe touched dead bone at several points, and some small pieces of the vomer were removed. Tissues covering arch of hard palate, red and tender. Patient put upon full course of biniodid. with increasing doses of iodid. potass. In the course of a few days the inflammation of tissues covering hard palate increasing, a perforation ensued. This affected patient's voice unpleasantly, and as he was a public singer, he was greatly disturbed, and begged for some more efficient mode of relief. Instead of encouraging him to wait, under an efficient specific treatment, until the slow separation of the necrosed bone was effected, I sent him to Dr. J. H. Goodwillie, whose demonstrations in removal of necrosed bone by aid of the dental engine I had witnessed on several occasions, and who subsequently published an account of the case at my request, and has sent me a copy for insertion in this place. Of the condition of the patient, Dr. G. says:

"He now has necrosis of the vomer and vault of the palate, with a small hole in the latter. Foetid discharge from the nose, occasionally stained with blood from excessive granulations. Administered iodide of potassium and cod-liver oil. Local treatment consisted in blowing into the nasal cavities iodoform and camphor triturated to an impalpable powder, with subnitrate of bismuth

and sulphate of potash, to reduce the superabundant granulations, and so have less bleeding during the operation. By invitation of the late Professor James R. Wood, M.D., to deliver a clinical lecture on extirpation of bones of the mouth and nose, I operated on this patient at his clinic at Bellevue Hospital, January 15, 1880. Administered four ounces of whiskey before the operation, and kept him under the influence of nitrous oxide during the operation, which lasted about fifteen minutes. No external incision was made, and the necrosed vomer lower portion of the ethmoid, both inferior turbinated bones and vault of the hard palate, were removed, by the revolving knives, through the nostrils.

No portion of the soft tissue on the hard palate was removed. On the completion of the operation, he was directed to blow his nose, to free his nasal cavity of the cut-up necrosed bones and blood, and then he was positively forbidden to again blow his nose, for the next twenty-four hours. After that time, the clotted blood was carefully removed by the dressing nasal forceps, and the nasal cavity completely covered by blowing in the iodoform and camphor powder.

"On the second day a nasal douche was given before the application of powder.

"On the next day after the operation he was able to attend to his daily duties.

"The wax model illustrating his case shows the opening in the palate one-fourth inch in length before the operation. Atrophy of the nose before the operation, from the non-respiration and constant blowing of the nose, as seen in the right ala, and the development of the ala, as seen in the left side of the nose, after the operation.

"The other model shows the opening in the palate closed and a new deposit of bone over the palate.

"He is in perfect health at the present time."

In syphilitic caries involving the vomer, the nasal and turbinated bones, and contiguous bony structures difficult of access to ordinary surgical procedure, the removal of diseased bone requires especial instruments

and skill not within the reach of the ordinary surgeon. The dental engine affords access to such necrotic processes, and until the surgeon can personally avail himself of the facilities it affords, for removal of carious bones in such situations, it is my opinion, that the best course will be, to relegate cases of this nature, to men who, like Dr. Goodwillie, have the mechanical skill and experience in the use of the dental engine requisite to perform the operations necessary for the complete removal of diseased bone in these localities. Otherwise we must usually follow the old plan of waiting, until the separation occurs, through the tedious process of exfoliation, aided by such internal remedies as have heretofore been relied upon for the care of these cases. This involves the danger of deformity, and delay in cure, which it seems to me few surgeons, aware of what especial skill in the management of the dental engine can accomplish, will feel inclined to accept. My own experience in several cases of syphilitic caries of the bones of the skull, where I had operated for removal of the diseased bone, and found rapid recovery result, has convinced me that, when syphilitic necrosis occurs, it is a purely local matter, and that it is good practice, in all such accidents, to remove the dead bone at the earliest practicable period, and that, as a rule, to which there are few exceptions, such removal will result in as prompt recovery as when the necrosis has occurred from other causes than syphilis.

LESSON XXI.

GUMMY TUMOR OF BONE—PRODUCING BRAIN SYMPTOMS, ETC.

Clinical case in illustration. Such lesions of rare occurrence before the second or third year of syphilis. Insidious in access. Sometimes producing extensive loss of bony tissue. First signs often through occurrence of vertigo, epilepsy, aphasia, or paralysis. Same symptoms may occur from accidents of the acute stage of syphilis. Cases in illustration. Possibility of confounding the brain and nerve disturbances of late syphilis, with those due to processes of the active stage of the disease. Mauriac's views in support of this position. Cornil's views.

CASE VIII. L. G., 35; policeman. In good general health. Had a history of irregularly treated syphilis, twelve years previous. About five years ago, he first noticed a swelling on the top of his head; also soon after, another on the left side: not tender, causing no inconvenience or pain. About a month after, he received a blow on tumor No. 1, after which he had much pain, and it finally suppurated and discharged pus freely. Examination showed an ulcer, about an inch in diameter, perforating the scalp just anterior to the vertex. The probe touched bony material at once, and a loose piece, half an inch square, was readily extracted. The second and more recent swelling was about the size of half a pullet's egg, very hard and insensitive. The man was at once put upon a mixture of biniodide of mercury and iodide of potassium, the latter in increasing doses.

The open lesion, which was at first quite painful, soon became less so, and the iodide, at the end of a month, had been raised to seventy grains three times a day, in a tumbler of milk, and was well borne. Within three months (notwithstanding several intervals of two or three days each, when he was prevented from taking his medicine) the hard tumor had entirely disappeared. His only complaint was of occasional vertigo. This continued after the healing of the necrosed lesion, which occurred a month or two later, leaving a cicatricial de-

pression which indicated loss, through to the inner table of the skull. The vertigo, which appeared to be symptomatic of a bony growth on the inner surface of the cranium, after some four months more of treatment finally disappeared. He was, however, kept on the simple mist. biniodid., a drachm thrice daily for the following year, and he has had immunity from trouble for the past three years.

Remarks.—Tumors of the cranium rarely occur before the second or third year of syphilis, and more often, not before the twentieth or later. Their access is very insidious, and as they are usually without pain, often come to considerable size before discovery. If the patient is temperate, and in good general health, they may remain stationary, at any point, without apparent change, until some irregularity in living or depression of the vital powers, disease, or injury as from a blow, when they inflame and break down, leaving a bony ulcer involving the thickness of the external table and the diploe. Penetration of the internal table is rare. The extent to which the skull may be damaged in this way is scarcely conceivable. The same mode of implication may extend even beyond its parietes to the bones of the face. The first announcement of trouble, in cases of cranial syphilis, may be through the occurrence of some nervous trouble from pressure on the brain; vertigo, as in the case just cited; epilepsy, aphasia, or muscular paralysis. The reasonable suspicion of antecedent syphilis, should be the signal for prompt and efficient treatment, addressed to the removal of syphilitic sequelæ. *Brain and nerve disturbance occurring during active stage of syphilis*, during the early months of syphilis, i.e., in the acute or secondary stage, localized paralysis or acute brain disturbance may occur—not due to the accumulation of the so-called gummy material, which does not exist during the active stage, but from the pressure caused through the formation of an accidental papule, or its equivalent, within the skull, or in the track or sheath of a nerve. Quite recently I have seen a facial paralysis extending to the hand of that side, in the papular stage of syphilis, passing off under treatment, simul-

taneously with the other lesions of that stage. Within the last three months a young gentleman under my care in the fifth month of syphilis, with papules, though sparse, yet distinct and characteristic, was suddenly attacked with acute mania. Two distinguished alienists of this city who were called in, pronounced the case one of commencing paresis, and sent the young man to Bloomingdale Asylum. In the course of a few weeks he was sufficiently recovered to be able to signify to his medical attendant at the asylum, that he was under treatment for syphilis when attacked with his mania, and showed the stains left by the papules. The result was a resumption of treatment for syphilis and complete recovery, within a very short time, when he voluntarily returned to my care.

The possible error of mistaking conditions, like the foregoing, for late accidents of syphilis, will be apparent.*

Syphilitic ostitis and periostitis, osteophytes, exostosis, epiphysial and parenchymatous, enostoses eburnation of bone, etc., of the *active period* of syphilis may be, I think, legitimately claimed to result from one and the same cause, viz., the cell aggregation and proliferation, *in loco*, which when occurring in the integument constitutes the papule.

This view would rationally explain the position of M. Mauriac, recently quoted in the American edition of Cornil on Syphilis, and which thus considered, is so entirely in harmony with my own position, that I shall yield to the temptation to quote some of M. Mauriac's statements bearing on this point. He says:†

(1) "Pericranial periostitis is often among the early manifestations of syphilis . . . even before the secondary lesions.

(a) "It is seated exclusively in the periosteum of the

* An accidental papule sometimes may be seen developing in the anterior chamber of the eye during the active stage of syphilis, which has received the title of *gummy tumor of the iris*. This apparent misnomer is calculated to create the impression that gummy tumors do sometimes occur during the early months of syphilis, I think, which can be satisfactorily proven to be an error.

† Cornil on Syphilis, Am. ed., 1882, page 264.

cranium, and if hyperæmia or inflammatory lesion of the osseous tissue exists it is *secondary* and remains subordinate to the periostitis.

(b) "Pericranial periostitis is the result of a true inflammatory process—an irritation or active process, as indicated by its acute symptoms and active course.

(The same may be said of the initial lesion of syphilis, or the papular eruption, both of which have been shown to produce irritation, through mechanical obstruction to the processes of nutrition rather than from the inflammatory nature of the lesions.) He further says:

(c) "This variety of cranial tumors, when a result of acquired syphilis in the adult, *has a tendency to resolution, either spontaneously or by appropriate treatment. The swelling readily disappears without leaving any trace.*

(Italics my own, to indicate the exact correspondence of these tumors in their behavior with that of the papular eruption.)

(f) "The tumors may be discrete or confluent, and usually are located on the anterior half of the cranium. *Their duration varies from four to six weeks when not submitted to treatment. Under proper medication they disappear sooner.*

(2) "Periostitis of the ribs, costal cartilages, and sternum may occur at the beginning of syphilis.

(3) "Periostoses and exostoses may develop at other parts of the osseous system during the early period of constitutional syphilis.

(a) "The period of incubation of these osseous lesions, dating from the appearance of the chancre, varies from thirty to one hundred and twenty days.

(b) "They may appear several days before eruption of the secondary cutaneous or mucous lesions. They occur spontaneously without the intervention of any exerting cause.

(c) "They seem to result from a form of syphilitic infection, in which the virus is unusually active, as compared with the resistant powers of the organism contaminated.

(5—a) "They may recover spontaneously, but they

disappear very much more rapidly under mercury and iodine, with local anti-phlogistic treatment.

(b) "They complicate the prognosis of syphilis, although they are often associated only with mild lesions in other organs and do not necessarily indicate a malignant local process or serious general constitutional tendency."

It appears to me to require a very moderate degree of perspicacity, to discover a remarkable similarity, in time, mode, and degree of development, in behavior after development, with and without treatment, and in relation to the prognosis of a given case, with that of the papular eruption. Considering, then, the power of penetrating through any and every tissue, occasionally manifested by the amoeboid cell, or syphilitic disease germ, the wonder only appears to be that such accidents as the local proliferation and accumulation of such cells, in various localities, outside their usual channels, are not more frequently observed. The probabilities appear to me that such erratic accumulations do very often occur, in the way just mentioned, but, that, as they are most likely to be located in the softer tissues, the mechanical disturbance is not sufficient to attract attention; but when occurring in the bony structures, or between these and the periosteum, very naturally periostitis of the mild and transient character, described by Mauriac, would be likely to take place. It is also a significant fact that such proliferations are favored by a sluggish circulation, such as may be inferred, in cases as Mauriac says (3) "*in which the virus is unusually active as compared with the resisting power of the organism contaminated.*"

In connection with the statements of Mauriac and with the views just expressed, it will be interesting to recall what M. Cornil says as to the mode of origin of syphilitic osteo-periostitis. "Syphilitic periostitis does not differ materially from ordinary osteo-periostitis, limited to the superficial layer of the bone and the periosteum, it most frequently occurs at the end of the secondary or in the tertiary period, attacking the tibia, clavicle, sternum, bones of the head, etc.

"Beneath the periosteum, between it and the bone, *there collect numerous round cells, analogous to those of embryonal marrow.* At the same time the deep layers of the periosteum are inflamed and *contain cells interposed between the fasciculi of fibres.* The neighboring connective tissue of the periosteum, generally presents a slight inflammatory œdema, so that the tumor, situated between the skin and bone, is due both to the swelling of the periosteum and to the inflammatory œdema of the subcutaneous connective tissue. The surface of the bone beneath the periosteum, has the openings of the Haversian canals enlarged and filled with marrow, which is either red and embryonal, or is gray and gelatinous, *consisting of the round cells of the medulla.* The fat has disappeared from these changed canals. This form of mild periostitis *may disappear and leave no trace,* even when it is quite deep, and in a flat bone, as the sternum ribs or cranium. It is accompanied with an embryonal condition of the marrow of the whole bone." (Cornil on Syphilis, Am. Ed., Henry C. Lea's Son & Co., Phila., 1882, pages 247, 248.

LESSON XXII.

LATE BRAIN LESIONS OF SYPHILIS—GUMMOUS INFILTRATION OF.

Clinical case in illustration. Prompt beneficial effects of specific treatment. Large doses of iodide of potassium evidently beneficial. Prompt retrogression in patient's condition through their discontinuance. Renewed improvement through resumption of remedies in mild form, and subsequent deterioration. Resumption of large doses of iodide of potassium objected to, and final relapse of the patient resulting in confirmed dementia. Remarks. Mr. Hutchinson's views of the diseases of the brain due to syphilis. Correspondence of the same with conditions in foregoing case. Suggestions of treatment for similar cases. Iodide of potassium in large doses claimed to be essential in treatment of the sequelæ of syphilis. This confirmed by experience of accepted authorities.

W. S. S., 37; civil engineer. History of a mild form of syphilis at 24; indurated initial lesion; sparse papular; syphilide; partial alopecia; mucous patches in throat. Desultory treatment by mercurials for three or four months. No appreciable evidence of disease after the sixth month.

Eleven years after, while in South America, engaged in very engrossing mercantile business, while in robust general health, he gradually became conscious of a failing and uncertain memory. His partners had observed this previously. He became also unusually emotional; tears coming without due occasion. He would drop asleep over his ordinary work, omit words in his business letters, recognizing this himself, on reperusal. He continued for two or three months to transact business, but was no longer trusted to do so without supervision. His physicians pronounced his trouble acute-softening of the brain, and he was sent home. He came under my care in March, 1878. He was still in excellent health. In addition to the foregoing symptoms, he had some aphasia and slowness of utterance; he was no longer able to correct his written mistakes as before, but was able to give a connected account of his trouble and also of his previous syphilis. He had

up to this time been treated, chiefly, by use of the bromides and strychnia, but had slowly, but steadily, deteriorated mentally, while his general health was yet perfect. He was an excessive smoker, and drank alcoholic beverages two or three times a day.

Mr. J. was at once put on the *mist. biniodid. hydrarg.* a teaspoonful thrice daily, with the addition of one drop of a saturated solution of the iodide of potass. with each dose, in half a small tumbler of milk thrice daily. Smoking and spirituous liquors wholly interdicted—plain wholesome food, regular hours, took the place of ill-selected food and late hours. The solution of the iodide was increased by one drop for each dose of the mixture, and given separately from it in a half tumbler of milk, and this continued up to the tenth day, when he was taking 30 drops or 30 grains of the iodide of potass., besides the 8 grains in his biniodide mixture in which he got also $\frac{1}{16}$ of a grain of the biniodide of mercury. Already there appeared some signs of amendment. The iodide was now increased more slowly: only one drop per day instead of one at each dose, as he complained of a little sense of nausea at times after taking the medicine. The milk was increased so that at the end of the third week from this he was taking 52 grains in a tumbler of milk, besides his mixture, containing 8 grains more, making one full drachm of the iodide of potassium, and $\frac{1}{16}$ of a grain of the biniodid. of mercury three times daily, and bearing it perfectly; smoking but one cigar daily and drinking but claret with his dinner. He had now improved so much that his friends remarked it on meeting in the street. He was less somnolent, and his difficulty of utterance was scarcely noticeable, as he was naturally slow of speech. This treatment was continued without change in any particular for three months, with gradual improvement, when, notwithstanding several lapses in his abstinence—on one occasion dissipating for several days—he had so far recovered that he considered himself, and his friends considered him, quite well. His medicines were given, however, with the distinct understanding that unless some especial contra-indication occurred, they should be

continued in same doses, viz., 1 drachm of potass. iodide, and $\frac{1}{16}$ hydrarg. biniodid. thrice daily for at least one year. Continuing apparently well for the next few months, he went to London, where he consulted an expert, who, while approving the previous treatment, thought it had been continued long enough and directed that it be discontinued. At the end of a month the patient went to Paris, and after a short period of dissipation was seized with acute mania and was placed in a *Maison de Santé*, where he soon became aphasic and somnolent, and his case was accepted as one of acute idiopathic cerebral ramollissement. A history of the case was sent to the physicians then in charge of the case, with suggestion to resume the former specific treatment. Under mercurial inunctions and small doses of potass. iodid. the patient once more improved, and hopes of complete recovery were held out. From being unable to recognize his relations, even requiring aid in all the operations of his excretory functions, and even sitting at times with open mouth and food unmastered in it, he became able to help himself in all ways, to write legible and coherent sentences and dates, to recognize and converse intelligibly, though with thick and at times somewhat difficult utterance. At this time, being in Europe, I was desired to see him in consultation with the medical officers under whose care he was, and found him in the condition last above described. The former diagnosis of the syphilitic origin of the trouble was concurred in by the resident physician, but great surprise was expressed at the magnitude of the doses of iodid. of potass. which had been used. When their immediate resumption was urged, a deprecating shrug accompanied the consent given, and it seemed scarcely probable, although the recommendation was enforced by cases and authorities, that the patient would get the full measure of what was, evidently, considered heroic treatment. Within a few months he began to retrograde; had frequent epileptiform seizures, and now, after a year, is still under the same care, in a state of hopeless dementia.

Remarks.—Mr. Hutchinson, of London,* in discussing the diseased conditions of the brain due to syphilis, says, "If we say that we recognize three forms of cerebral disease—one in which the symptoms result from arterial occlusion, one from irritation of gummata, and one from periosteal thickening—we may assume that sudden attacks of paralysis denote one, that the second has all the symptoms common to cases of tumor, and that severe pain and headache go with the last. . . . No doubt in some cases all three lesions present together, and in many two of them." The probabilities seemed to me in favor of the accumulation of germinal material (gummy deposits) in the adventitia of arteries, as described by Heubner† and by Edes,‡ sufficient to produce in the first instance symptoms of pressure, then of irritation, finally obstructed circulation and consequent softening. The two causes, viz., arterial occlusion and irritation and pressure from gummata, combining in this case. The prompt benefit from specific treatment in the first instance warrants the belief that its continuance as originally contemplated would have not only prevented the relapse but in all probability have resulted in permanent cure. In any event the fair and full trial of it could not have eventuated more disastrously than its omission. Similar accumulation (gummy deposits) occurring in the spinal cord or at any point throughout the nervous system, producing paralysis in various localities and degrees, even in some instances perfectly simulating locomotor ataxia,§ and general paralysis of the insane, would be treated with equal benefit, through the same means and measures made use of in the early stages of the foregoing case. Inunctions of the mild mercurial ointment, a drachm morning and evening, instead of, or even in cases of urgency, in addition to, the administration of mercurials

* *London Medical Times and Gazette*, Feb. 7, 1877.

† Cornil and Ranvier, *Pathological Histology*. Am. Ed., p. 331.

‡ *Physiological Pathology of Syphilis*. Otis. Putnam's Sons, 1881.

§ See Professor Erb's paper "On the Role of Syphilis as a Cause of Locomotor Ataxy," in "Transactions of the International Medical Congress," seventh session. London, 1881. Vol. ii., p. 32.

internally. The iodide of potassium might also in obstinate cases be carried up to its highest point of tolerance, or until the urgent symptoms yielded. As high as 2 ounces of the iodide in the 24 hours have been administered, with final relief of grave destructive late lesions of syphilis.*

The varieties of syphilitic sequelæ, dependent upon locality and tissues involved, it will readily be seen, may be interminable. If such lesions are, as is claimed, dependent upon obstructed lymphatic channels or spaces, it will readily be seen that they may occur at any point in the human organism to which nutritive material is carried. The attempt to classify them in regions, organs, and tissues, while aiding in the study of special symptoms and local disturbances due to their initiation, development and progress, unless suitably guarded by explanation, is open to the objection that from this fact they are liable to be made the subjects of consideration as so many varieties of disease rather than the same variety simply modified in appearance and effects through the influence of locality. It will be recalled as a significant fact that no matter what the locality, appearance, or symptoms of presumably syphilitic origin, one and the same line of treatment is indicated in every lesion occurring throughout that period of syphilis known as the tertiary and quarternary stages of syphilis, or the period of syphilitic sequelæ.

* Genito-Urinary Diseases with Syphilis. Van Buren and Keyes. Appleton & Co., New York, 1874, p. 570.

LESSON XXIII.

SYPHILIS OF INFANTS AND HEREDITARY SYPHILIS.

Does not differ essentially from syphilis of adults. There must always be a syphilitic disease-germ to initiate the disease. Difference in syphilis of the embryo. Syphilis of the infant and syphilis of the adult all dependent upon the same influences, modified by the nature of the tissues involved. Treatment of all must be based on same principles. Reasons for this view. Syphilis as a result of obscure hereditary influence not accepted. Reasons in support of this view. Disease of embryo or infant often resulting from pre-existing syphilitic disease of parents. Not necessarily syphilitic. No authenticated cases of syphilis in embryo, or infant conceived after contagious or active stage of syphilis in parents has passed.

If the position taken in the preceding lessons is correct—viz., that syphilis is the result of undue proliferation of germinal cells, brought about by the influence of a syphilitic cell or disease-germ, which has been brought in immediate contact with a healthy germinal cell, then all syphilis must be attributed to a similar cause. There must always be a syphilitic disease-germ to initiate the disease. The different modes through which contact, initiating the disease in adults or children, is effected, has already been explained. Syphilis in infants cannot differ from this, except so far as the disease is modified by the immature tissues in which the disease is developed. The treatment of syphilis of infants must be based on the same principles as that for adults. In this view, strictly speaking, there can be no such thing as *hereditary syphilis*. If, as has been shown by citation of numerous instances, notably by results of the recent extensive observation of M. Fournier and others—the infectious property of syphilis is *self-limited*, and does not continue beyond a period of three or four years, all cases of transmitted syphilis beyond such period, whether by immediate contact or through alleged hereditary influence, becomes impossible. If it can be shown that no well-authenticated case of transmission

of syphilis has occurred beyond a period of three or four years, as has been claimed, then an hereditary influence extending through generations cannot be accepted. The necessities for the production of syphilis require for its initiation *a disease-germ of syphilis*. The development of the disease, following its contact with healthy cell elements, is well understood—a certain definite course in its progress is recognized as necessary in all cases—a stage of proliferation with contagious non-destructive lesions—the so-called primary and secondary periods—then a stage of accumulations of lymphatic elements, non-contagious, but which produce destructive lesions through mechanical interference with processes of nutrition. In order, therefore, to the production of the disease in the adult, in the infant, or in the embryo, the infecting cell of syphilis must first be brought in contact with healthy cell material. No mysterious hereditary influence is necessary, or can be admitted. If the disease-germ of syphilis by direct contact with external parts or through its amoeboid power traversing tissue, reaches healthy cell material, whether in the adult, the infant, or the embryo, then the syphilitic influence is directly transmitted, and its development must be governed by the same laws that characterize its progress in the known behavior of the disease in the adult, modified to greater or less extent by the age and degree of stability of the tissues in which the disease is developed. First, the localized proliferation and accumulation of cell material not necessarily destructive; second, accumulations of cell material, which induces destructive action through interference with processes of nutrition. In this way it will be seen that syphilis in the embryo, syphilis in the infant, syphilis in the adult, is the legitimate result of similar—in point of fact identical, processes—producing results which, while apparently differing in many respects, may yet be explained in complete harmony with the known behavior of syphilitic disease in the adult. It is undoubtedly the fact that much disease in foetal and infantile life results from pre-existing disease in the generative organs of the parents, who have been subjects of syphilis—but that any syphilitic

disease, proven to be such by its power to transmit syphilis, has been communicated to healthy persons, by infants conceived after the active or contagious stage of syphilis has passed, there is no well-authenticated evidence to prove.

LESSON XXIV.

CHANCROID: ITS NATURE AND TREATMENT.

Definition. Character. Usual origin. Destructive. Contagious. Venereal. Description. Secretion always inoculable. Loses power in each successive inoculation. Under favoring circumstances its progress self-limited. Under unfavorable conditions assumes a vicious type. Phagedenic form. Serpiginous. Extension through lymph vessels to glands, producing bubo. Pus from chancroidal bubo possesses properties of original sore. Chancroid varies in activity. Activity usually corresponds to that from which it is derived. Hence every grade, from typical chancroid to simple excoriation may be met. History of chancroid. At one time confounded with syphilis and gonorrhœa and treated with mercury. Ricord differentiates between gonorrhœa and chancroid. Bassereau proves the distinctions between chancroid and syphilis. Clerc's views. All pus shown to possess contagious properties. Low condition favoring production of sores by inoculation. Dr. Wigglesworth's experiments proving production of contagious sores from simple pustules. Non-specific nature of chancroid thus shown to be probable. Causes which tend to intensify its activity. Fournier's experience in proof of this. Conclusion inevitable that chancroid is not of specific origin, but a self-engendered disease resulting from stimulation and vitiation of benign natural processes. Chancroid often mistaken for syphilis. Necrosis the characteristic of chancroid. Growth the characteristic of syphilis. Manner in which the two separate diseases may be associated. Difficulties in diagnosis. Syphilis and chancroid never in any relation except as life may be in relation to death. Syphilis always the type of rapid growth of germinal elements. Chancroid always characterized by death of tissue.

Chancroid is an acute, contagious ulcer, recognized as resulting from venereal contact. It is a purely local disease, possessing characteristics which entitle it to be considered, *par excellence*, the highest type of acute ulcerative action. In the great majority of cases it is the result of inoculation of the purulent secretion of an already existing ulcer of a similar character. Applied to sound integument or mucous membrane, it is capable, under favoring circumstances, of effecting a solution of continuity of the part, and of communicating to it, at once, its destructive and contagious properties. More commonly and readily, it is established upon an abrasion

of the skin or mucous membrane produced *in coitu*. On application of the purulent secretion of typical *chancroid* to an abrasion, either on the person already affected or on one previously free from the disease, congestion, inflammation, suppuration, rapid destruction of tissue follow in quick succession. The ulcer, thus formed, presents all the characteristics of rapid destructive action. It is sharply cut, with ragged edges and pultaceous floor, and secretes pus freely. Chiefly characterized by its contagious property, the chancroid is seldom single, several distinct lesions usually presenting at the same time. Occurring under circumstances of good general health, cleanliness, and temperate living, its progress is usually self-limited; gradually increasing, from two to five weeks, it acquires a diameter of from three to six lines; the loss of tissue is then slowly restored, and a scar like that of an ordinary burn is left. From first to last, its secretion is inoculable, and the sore is capable of being reproduced upon the person bearing it. When reproduced by artificial inoculation, it loses its contagious power, in each successive inoculation, until the secretion from it is no longer inoculable. It will thus be seen, that the tendency of the disease, under favoring conditions, is always towards recovery. When acquired, under unfavorable conditions however, such as a depraved constitution, irregular life, filth, and alcoholic excess, the chancroid assumes its most vicious type. Characterized now by a high grade of inflammatory action and an increased destructiveness, it not unfrequently takes on a peculiar action which is termed *phagedenic*, through which, in a few days, or even hours, important loss of tissue ensues, not rarely resulting in irretrievable mutilation, and possibly in loss of life. In other rarer instances, the chancroid takes on a sluggish but persistent form, known as the *serpiginous*, with a gradual, irregular loss of tissue, involving the integument only, but continuing often for years in spite of every means and mode of treatment. The extension of the *chancroid*, usually by continuous tissue, not unfrequently takes place through the entrance of the contagious secretion into a lymphatic vessel (opened by chancroidal

ulceration), and its passage along that vessel to the adjacent lymphatic gland. This accident may occur at any period during the continuance of the chancroid. The gland, in this manner affected (usually in the groin, and known as the chancroidal bubo), becomes tender and swollen. Evidences that the peculiar destructive chancroidal action is going on, within the substance of the gland, become daily more distinct, until, in a few days, an abscess is formed. On the discharge of the purulent contents of this abscess, they are found to possess the peculiar properties of pus from the original ulcer, and the open bubonic abscess takes on the appearances and other characteristics of the typical chancroid.

The *venereal ulcer or chancroid*, in its early stages, is promptly amenable to judicious remedial measures. The application of any caustic, of sufficient power to destroy completely all the tissue which has been implicated in the diseased action, suffices to change the contagious venereal ulcer to a simple sore, when it goes on to recovery without other treatment than such simple sores require. The conditions which determine the severer forms of the chancroid, are recognized as already stated. It is also found that the particular lesion which may present, partakes in great degree of the activity, greater or less, which has characterized the lesion from which it was derived, so that every grade, from the simple excoriation to the sharply defined and most active ulcer, may be met. Hence, all do not require the prompt and energetic course necessary to arrest and cure the typical chancroid. In the milder varieties, the judicious application of carbolic acid, iodoform, sulphate of iron, and other, even simpler antiseptic, sedative, and astringent agents, may suffice to bring about an arrest and cure. In the lightest forms, it is often difficult to distinguish from non-venereal pustules which result from acrid sebaceous secretions, or from connection with a female suffering from an acute form of simple leucorrhœa.

In regard to its history, the chancroid is conceded to be of ancient origin, even to antedate the advent of *sypilis*. It has various synonyms—viz: “pseudo-syphilis,” “soft chancre,” “non-infecting chancre,” “chan-

croid," etc. By the latter term, *chancroid*, it is almost universally known at the present day. It was distinctly recognized and described by the ancients as a disease known from the earliest times. Notwithstanding this, shortly after the recognized appearance of syphilis in Europe in 1492, it became confounded with that disease. Its purely local character was obscured, and it was subjected to constitutional treatment as a form of syphilis. Its chief characteristics, however, always most marked, were never quite lost sight of. Evincing its destructive property *at once*, on inoculation of its secretion upon healthy tissue, and commonly associated with inflammatory enlargement and suppuration of contiguous lymphatic glands, it was thus directly opposed to the sluggish course of the syphilitic local affection and its non-suppurating glandular concomitants. Yet it was so often found associated with and followed by, the constitutional manifestations of syphilis, that its distinctive significance was doubted. When, after a time, the well-known acute venereal ulcer was occasionally observed exchange its soft edge and base, for the indurated tissue known to characterize the early syphilitic lesion, the fallacious theory of *post hoc ergo propter hoc* prevailed, and thus the confusion of the two distinct diseases, became complete. From this time, *all* the contagious venereal diseases, gonorrhœa, chancroid, and syphilis, were accepted as practically identical, requiring the same constitutional treatment. It was found, however, after the habitual mercurialization of persons afflicted with soft sores or with gonorrhœas, for more than two hundred years, that constitutional syphilis did not necessarily follow the occurrence of the soft ulcer nor of a gonorrhœa, even when no treatment was resorted to, while the ulcer with indurated base and edge was invariably succeeded by the general manifestations of syphilis. John Hunter in 1786 was the first to recognize, publicly, the value of the induration characteristic of the venereal sore which was followed by constitutional syphilis, thus making the first positive step, toward identifying and restoring to the different venereal disorders, their distinctive individuality. Hunter, however,

misled by an experiment upon his own person, taught that while the local manifestations of the venereal diseases were different, their source was identical, and that the peculiar form and nature which they assumed in any given case was dependent upon some peculiar condition or idiosyncrasy of the affected individual. In 1798, Benjamin Bell of London claimed a simple origin for gonorrhœa, and in 1830, M. Ricord of Paris, after a series of observations and elaborate experiments, in inoculating the purulent fluid of gonorrhœas, and the secretions of the soft and hard venereal lesions, demonstrated the purely simple, non-specific nature of gonorrhœa, thus completely and for ever eliminating it from among the manifestations of syphilis. Ricord, however, notwithstanding his numerous and carefully-observed inoculations, and while distinctly recognizing the local and ultimate differences between the hard, or Hunterian, chancre and the soft sore or chancroid, yet accepted and taught Hunter's view, viz., that the difference between them was not one of origin, but of personal condition or idiosyncrasy. It was reserved for M. Bassereau of Paris (a pupil of M. Ricord), to demonstrate in 1852, the fact that, in the disease then known as syphilis, comprising the soft local venereal ulcer and the indurated infecting venereal sore, with its consequences, two separate diseases existed. Upon the confrontation (*i.e.*, personal comparison) of a very large number of persons affected by venereal disease, with those from whom their disease had been acquired, Bassereau found that in every person presenting a venereal ulcer, accompanied by well-pronounced evidence of constitutional syphilis, the person from whom the disease had been acquired was also, or had recently been, the subject of ulcers which were followed by constitutional syphilis, and that in no case was syphilis ascertained to originate from a person bearing the soft venereal ulcer alone. Similar observations, by confrontation, were made by Messrs. Dron, Clerc, Diday, Rollet, and Fournier in 1856, and in 1857 by Messrs. Fournier and Caby, under the supervision of M. Ricord, with the result of proving that in all cases of chancroid, the type of ulcer remained unchanged in

passing from one individual to another. Nevertheless, M. Clerc, while accepting and confirming the observations above alluded to, claimed to have produced the typical chancroid by inoculation of the secretion of an infecting (syphilitic) chancre, upon a person previously the subject of syphilis, and thus to have demonstrated that the chancroid was the product of the inoculation of the syphilitic virus, upon persons then or previously affected with syphilis. Clerc also claimed, that, while, as a rule, the chancroid, thus originated, usually transmitted only chancroid, yet on being inoculated upon a healthy person, it was capable of reverting to its original type, and hence of communicating syphilis; thus asserting the unity of origin of the two diseases. Those holding this view were known as *unicists*. Rollet and others held, on the contrary, that not only were chancroid and chancre (the initial lesion of syphilis) separate and distinct diseases, but that they owed their origin to separate and distinct poisons. Thus the school of so-called *dualists* was initiated. The position of M. Clerc was supported by the observations of Henry Lee of London, the late Prof. Böck of Christiana, Melchior Robert, and others, who succeeded in producing the typical chancroid upon persons syphilitic and non-syphilitic by inoculations of pus from an irritated syphilitic chancre. It was required that the degree of irritation in all cases should be sufficient to induce a free *purulent* secretion. Sores produced in this manner were inoculated, in successive generations, upon persons quite free from syphilitic taint, and behaved in all respects like the ordinary venereal chancroid. It was, however, found that when the superinduced irritation subsided, and the secretion was no longer purulent, it was no longer auto-inoculable. Hence it became evident that the property of inoculability was consequent upon a peculiar action resulting from the persistent irritation of an already diseased surface. The fact that the chancroid could be established upon persons entirely free from syphilitic taint, and not be followed by syphilis, demonstrated that its existence was not necessarily dependent upon the syphilitic principle. Experiments were then made by Pick, Bidencap,

Koebner, Böck and others, to ascertain the effect of inoculations of pus from simple lesions on persons free from syphilitic taint. The result showed that affections in non-syphilitic persons which are of slight virulence, the secretions of which are not inoculable, can be made to produce an inoculable secretion by the application of an irritant. Kaposi states that, in his experiments the pus taken from acne, and from scabies in non-syphilitic individuals, has produced pustules, the pus from which was inoculable in generations on the bearer as well as on other non-syphilitic persons. In 1866, Dr. Edward Wigglesworth, Jr., of Boston,* while studying under Prof. Zeissl of Vienna, and being entirely free from any suspicion of venereal taint, but in somewhat impaired general health, inoculated his own arm with pus taken from a simple pustule of acne. This produced a similar pustule at each of the three points of inoculation. Pus from these being again inoculated, a third generation was established. Nine distinct sores, the result of the inoculation, were present at the same time, and, pursuing a similar course, finally healed, leaving as many distinct cicatrices, indicative of loss of tissue through the process of ulceration. This experiment, during its progress, was under the personal observation of Prof. Zeissl, and was repeatedly exhibited to his class, as demonstrating the contagious and destructive properties of non-specific pus, under certain circumstances unconnected with syphilis, or with any venereal influence. Observations (personal) have shown that the muco-purulent secretion from non-specific nasal catarrh will sometimes produce excoriations of sound cuticle. That contact with secretions from non-specific leucorrhœas will sometimes promptly cause pustular eruptions (*herpes*) of the preputial mucous membrane of the male; and these more or less rapid in development and progress according to the degree of activity of the inoculating secretion. In some instances so simple that they are scarcely more than sero-purulent vesicles, and in other cases observed

* Reported by Dr. Bumstead in his paper "On the Unity and Duality of Venereal Sores," read before the Centennial Medical Congress of Philadelphia.

so vicious that in appearance they do not differ at all from the typical chancroid; the secretion being also *auto-inoculable*, as proven by the occasional occurrence of similar lesions upon opposing surfaces.

Mr. John Morgan of Dublin, in his work on venereal diseases (1873), cites numerous instances in which he has observed the typical chancroid to result from inoculation of the muco-purulent secretions of leucorrhœas in syphilitic women, upon other women, also subjects of syphilis. Vidal cites a case, where pus, taken from a pustule of simple ecthyma, in a patient suffering from typhoid fever, was promptly inoculable on the patient, but failed when inoculated upon a healthy person. It is therefore shown that the quality of pus is variable, according to the circumstances under which it is produced and the condition of the person upon whom it may be inoculated. That a low condition of the general system, from any cause, predisposes the healthy tissues to take on ulcerative action, and to elevate the accompanying purulent secretion, to a point of contagiousness. Lesions, especially of mucous membrane of the human genital apparatus, of both male and female, are common under the circumstances peculiar to the venereal act. Inflammations of mucous membrane, in the same locality, are frequent, and characterized by muco-purulent secretions, often profuse and acrid; and this, too, when the subjects of them are in good general health and living under the most favorable hygienic conditions. When, therefore, it comes to be considered that, the most frequent habitat of the chancroid, is in localities where venereal excess and every kind of debauchery abound: when to this are often added the potent element of syphilis and scrofula, hereditary and acquired, filth, and irregular living: and when (as has been shown by Fournier* and others) chancroid is found by far the most frequent in proportion to syphilis among the debased and dissolute, the conclusion is inevitable that chancroid is, and

* Fournier noted in his private practice, 82 simple, 252 infecting. In Hôpital du Midi of 341 chancres, 215 were simple; and in the report of service in the same hospital, where 10,000 cases of venereal sores were treated, 8,045 were said to have been simple chancroids.

of necessity must be, a self-engendered disease, possessing no specific virus, but acquiring its power for destruction and contagion, through the stimulation and vitiation of benign natural processes.

The venereal ulcer, or chancroid, acquires its chief importance from its liability to be mistaken for, and treated as, the initial lesion of syphilis. The distinction between the two lesions at the outset is often impossible. The active characteristic of the chancroid is recognized as a necrosis—that of the syphilitic lesion one of growth or proliferation. The surface of a sore, then, may be the field of chancroidal action, while the living tissue beneath may be at the same time a centre of proliferation of syphilitic disease-germs, which are constantly gaining access to the general circulation through the contiguous lymphatic vessels. These germs may be originally deposited upon a simple abrasion or one already the seat of chancroidal action. If the former, the imposition of the secretion of a chancroid upon the same point, if the disease-germs have been freshly deposited, might cause their destruction, and thus leave only the chancroidal element; but once the syphilitic principle has extended below the surface and has entered a lymphatic vessel, it has gone beyond the sphere of action of the chancroid. The only method of determining whether a given chancroid or other lesion, occurring after a suspicious venereal contact, is or is not to be followed by constitutional syphilis, is to reserve a final decision for full forty days subsequent to the exposure. This course should be pursued even though during the interval the suspected lesion, possessing all the characteristics of the typical chancroid, should have fully healed. If, during time above specified, no hardening of the tissues composing the edge and base of the sore has taken place, nor, if healed, of the cicatrix, nor any enlargement of the adjacent lymphatic glands, can be discovered, then, and not until then, can the patient be assured that he has had an uncomplicated chancroid, and that no syphilis will follow. Those milder forms of ulcerative action which are just within the line of distinction between the simple so-called herpes and the chancroid, are the most frequent to exhibit subse-

quent evidences of syphilitic infection. By reason of their inactivity, they are less likely to destroy any of the germs of syphilis which may come in contact with their surface.

The frequent association of chancroid with syphilis will never lead to mistaken identity, if it is constantly borne in mind, that syphilis is always, in all its manifestations, a process of growth, of proliferation. The most scientific and critical examination of the products of syphilis, from the *initial lesion* to the *gummy tumor*, has never been able to detect any abnormal material. Nothing but excessive accumulations of tissue-building cells. Chancroid, on the other hand, from its inception to its cicatrization, is a process of necrosis—literally, *death* of tissue. So that *syphilis* and *chancroid* are always, and only, in relation to each other, as *life* to *death*—each the highest type of its own peculiar action.

LESSON XXV.

NATURE OF CHANCROID.

Evidence that it is non-specific. New foci of contagion essential to long continued reproduction. Difference between contagious ulcerations produced by various irritants and by contact with pre-existing chancroid only one of degree and not of kind. Changes in simple purulent lesions through non-specific causes may engraft a contagious property upon them which is practically identical with that of lineal chancroid. Cases in illustration.

Before proceeding farther it is essential that the nature of chancroid should be fully appreciated.

If it is a specific disease, that is to say, only capable of being set up through contact with the secretion of a previously existing chancroid, then acquirement of chancroid is proof indisputable of criminal venereal contact, either by the subject of it, or of the one from whom it was mediately or immediately contracted. It will at once be seen, that this is a point which may become of great importance in its medico-legal relations. It will then be worth our while to pass in review some of the known facts bearing upon this matter.

First let us determine exactly what is understood by the term *chancroid*. We may accept the usual definition, namely, that sores promptly following venereal contact, (from 24 hours to 8 or 10 days,) possessing the destructive and contagious property, are called *chancroid*, and are claimed, by certain authorities, to be due, in every instance, to a specific virus.

Fournier says this in the most emphatic way, thus: "If all the patients in the world with chancroid, would avoid contact with others, until their malady got well, the disease would cease from off the earth." This is quoted in a recent work on syphilis, etc., by Drs. Van Buren and Keyes, and emphasized by a positive statement that chancroid arises only from chancroid.*

* "Genito-Urinary Diseases with Syphilis." New York, D. Appleton & Co. Page 477.

It is known and accepted that chancroids vary in activity, from those which are highly contagious and rapidly destructive, to those which are feebly destructive and are inoculated with difficulty. This is a well-known clinical fact, and has been repeatedly proven in the experiments with artificial inoculations by Böck and others.* "A certain pus is employed ('chancroidal') and re-inoculated until it will no longer produce a pustule; *then fresher pus from some younger chancroid*, until it also fails."†

If this decadence takes place in the artificial inoculation, it is not reasonable to suppose that the same result would be reached by repeated inoculations through venereal contact. Hence the chancroid, by the continued re-inoculations of venereal contact, would grow less and less virulent, as communicated from person to person, until it finally died out.

Unless therefore new foci of contagion were created, *or new virulence added*, chancroid would long ago have *ceased from off the earth*. We must then take one of these two positions in regard to it; either some added virulence must be accepted as arising from circumstances connected with the venereal contact (since it has been conclusively shown that by simple re-inoculation chancroid speedily loses its contagious and destructive properties), or that from circumstances connected with venereal contact, new chancroids are originated. It is not necessary that we should be able to explain the exact combinations which increase the virulence of a declining chancroid, or which give rise to it *de novo*, in order to prove that certain possible conditions really do intensify and even originate chancroidal action or virus. If there is a difference between the behavior of the chancroidal virus, when inoculated by means of a lancet, and when inoculated through venereal contact, that difference can only be referred to the circumstances attendant upon the venereal act. How then do the circumstances differ in an artificial and in a venereal in-

* Bumstead on Venereal Diseases, 3d ed, page 217 et seq.

† Van Buren and Keyes, p. 470.

oculation? In the first we have the virus inserted free from local or general circulatory excitement. In the second both are distinctly present. Under circumstances of equal cleanliness and equally free from undue tendency to purulence, the result might not be markedly different. But to the latter mode of inoculation, viz., that by venereal contact, we may have in addition, various potent influences, as such increased irritation from irritant leucorrhœal menstrual and preputial secretions, filth, excessive venereal indulgence. Each one of these added conditions is well known to be capable of initiating local inflammation, and of increasing inflammatory processes already instituted. It can even be shown that a combination of these conditions may originate a lesion which distinctly exhibits loss of tissue, and the secretion of which is capable of setting up a similar lesion on an opposing surface, therefore possessing the contagious property. If this can be proven, it seems to be clear that the difference between a lesion thus produced and the typical so-called *specific* chancroid is simply one of degree, and it may be logically claimed that circumstances which have been shown capable of setting up such a lesion and which are shown to add to the virulence of a declining typical chancroid, may, under favoring conditions, produce an actively destructive, promptly contagious lesion, that is to say, a typical chancroid.

Now it is a well-recognized clinical fact that certain conditions predispose to purulence. A lowered state of health, free from any disease, was shown in Dr. Wiggleworth's case, not alone to favor simple suppuration, but to be capable of producing pus of a distinctly contagious character.*

Persons affected with Syphilitic disease,* Scrofula, Scorbutus, chronic Splenitis, etc., are also predisposed to purulence; this can also be said of the subjects of every species of dyscrasia. Local conditions may also increase the suppurative tendency. Redundant preputial tissues, producing undue heat, moisture and friction,

favor purulence ; also, dependent position. Prof. Böck's experiments in inoculations of chancroid, showed that the higher upon the body inoculations were made, the less tendency to excessive suppuration and also to phagedena.

Again, it is a well-established fact that changes occasionally take place in purulent secretions, through which new qualities and powers are developed. Benign or 'laudable' pus may thus acquire a highly irritant property, as shown in the following case :

CASE I.—A gentleman presented to me some time since complaining of an inflamed condition of the glans penis and prepuce, which inflammation, as he said, followed every connection with his wife. On examination the preputial tissues were found to be redundant and the mucous membrane of the glans, as well as of its preputial reflection, was intensely congested and bathed in a muco-purulent secretion ; this condition appearing at once after connection, increased, the parts becoming moist and painful and continuing more or less so for several days. The wife was said to be afflicted with a profuse purulent vaginal discharge. It was also stated by the patient that connection with his mistress was not followed by any such trouble.

Again in certain cases, instead of a diffused inflammation, we may find more strictly localized inflammatory lesions from a similar cause, as will be shown in the following case :

CASE II.—Mr. H. consulted me about five years since on account of a pustular eruption on the preputial mucous membrane near its attachment at the fossa-glandis. His first trouble had appeared about six months previously as a single pustule in the fossa on the right side. This was shown to a surgeon, who notwithstanding the patient's assurance that he had no connection except with his wife, promptly pronounced it a chancroid and cauterized it with nitric acid. Within a day or two several small vesicles appeared in the vicinity, when the surgeon came to the conclusion that the primary lesion was of the same character, and that all were herpetic. The vesicles also became pustular and healed under a

simple astringent dressing. There was a history of several subsequent similar attacks. In view of these facts the half dozen lesions presenting on his first visit to me (previously alluded to), although distinctly ulcerative, with inflamed border, and varying in size from a small split pea to a grape-seed, were considered of herpetic origin. The correctness of this view was confirmed by their rapid healing under simple astringent applications. A mild tannic acid lotion was prescribed as a prophylactic; which, however, did not prevent recurrence of the trouble within a week. This yielded like the previous, and a lead lotion was used with the apparent effect of preventing further trouble for nearly a month, when the patient, went off on a fishing excursion. On his return, some ten days after, he presented not only pustules on the site of the previous ones, but several on the glans penis *exactly corresponding to the locality of pustules on the preputial mucous membrane when drawn forward on the glans*. In addition there was a somewhat painful enlargement of the inguinal glands of the right side, attributed by the patient, to taking cold after resting the butt of his bass-rod, for several hours, in the groin of that side. The pustules healed somewhat tardily under repeated applications of nitrate of silver, but the glands went on to suppuration and the formation of deep sinuses. All healed, however, in a couple of months, when, three days after connection with his wife, another crop of pustules was discovered.

It was then suspected that the difficulty was the result of the connection, and upon a careful retrospect, the patient came to the conclusion that several, if not all of his previous attacks, had followed similar connection after about the same interval.

On inquiry, the wife was found to have been, for the previous six months, under treatment for an obstinate uterine catarrh by a distinguished gynecologist, who fully confirmed my opinion, that contact with the acrid leucorrhœal discharge, had occasioned the husband's trouble. Her final recovery and his subsequent immunity from the so-called herpetic trouble fully supported this

conclusion. Both the gentleman and his wife were wholly free from suspicion of any illicit contact.

Another instance of ulcerated and contagious lesions from non-specific causes, will be recognized in the following case:

CASE III.—Mr. S., aged twenty-seven, had been married about two years when, after the birth of a second child, his wife suffered from a leucorrhœa which continued more or less troublesome for several months. In seeking my professional aid for himself, he stated that during this time he was subject to occasional attacks of herpes preputialis, and that whenever any abrasions occurred during connection, they were sure to be followed by points of ulceration, which only healed after several days' treatment by bathing and simple cerate. On examination, several sharply cut ulcers, from one to two lines in diameter, were seen on the preputial reflection and in the fossa glandis. There were also two on the glans penis, more recent and smaller, which matched exactly upon similar lesions on the preputial reflection, when the prepuce was drawn forward. The current attack was said not to differ essentially from those to which he was accustomed, except in that it was associated with enlargement of glands in both inguinal regions. One point, especially in the right groin, was inflamed, sensitive to touch and fluctuating. This was opened, and discharged a small quantity of laudable pus. The ulcerations healed under the influence of cleanliness and simple applications; the patient necessarily keeping at his business as book-keeper in a large wholesale establishment; but the glandular abscess, the only one occurring, lasted for a full month before healing was complete. The patient's general health was fair. No scrofulous or syphilitic antecedents. The only apparent cause predisposing to ulcerative trouble was a very moist and redundant prepuce, which was subsequently removed. Since the circumcision, now four years, there has been no reported recurrence of the herpetic trouble.

Again it would seem that ulcerations may occur, under certain circumstances, as a result of contact with vitiated normal secretions, as shown in the following:

CASE IV.—A gentleman who had been under my professional care for several years previous, and had no occasion to misrepresent his case, sent for me. He stated that he had a gonorrhœa acquired from an illicit connection with the wife of an intimate friend, thirteen days previous. On the completion of the act, the lady discovered that she was menstruating, and so remarked, with many expressions of regret. Some four days after, a little soreness was felt in the urethra, near the orifice, and in a day or two more, a whitish discharge appeared. He consulted a medical friend at his club, who after hearing of the exposure, pronounced the trouble gonorrhœal and treated him with capsules and injections. After ten days of this, getting neither better nor worse of the discharge, a tenderness and swelling of a right inguinal gland occurred. Through his wife's solicitation he sent for me; on examination I found a very scanty purulent discharge from the meatus urinarius, on opening which, a sharp-cut ulceration was seen just within the orifice, and about the size of a grain of rice; there was no urethral tenderness beyond this point. The gonorrhœal remedies were discontinued, and the lesion thoroughly cauterized with solid nitrate of silver. An inflamed gland in the right inguinal region, size of a walnut, was also present, no fluctuation; this was painted with iodine. Suppuration occurred after several days, and the abscess was freely opened, discharging apparently healthy pus. Auto-inoculation of this pus failed to produce any result. The urethral ulcer resisted repeated cauterizations for about a fortnight, and then healed. At about this time the wife began to suffer from painful urination, and an examination revealed a superficial ulcer of mucous membrane, the size of a three-cent piece, just below and infringing upon the meatus urinarius, secreting pus freely. The husband acknowledged to an attempt at connection on the evening following the illicit intercourse, but stated, that with this exception, it was the only one, except with the friend's wife, that he had for a full month. In addition, the lady had a swollen and inflamed inguinal gland in the right groin. The lesion at the meatus

urinarius was touched with pure carbolic acid, previously to which, however, the purulent secretion from it was inoculated on the thigh of the husband. The results of this inoculation were negative. Notwithstanding repeated applications of the carbolic acid, the ulceration in the wife progressed in depth and extent during the following ten days, until it invaded the urethral canal a full quarter of an inch; then an application of pure nitric acid was made. During this time, several more unsuccessful inoculations were made upon the husband. Much urinary distress occurred, and notwithstanding the application of the nitric acid, the ulceration progressed along the urethra, which in the meantime was treated by suppositories of iodoform and cocoa butter. The lady was in delicate health but without any recognized constitutional dyscrasia. Tonics were administered, but the suffering increased and the ulceration was advancing into the deeper part of the urethra. During all this time, the lady with whom the husband had the illicit intercourse and her husband had been calling almost daily, on visits of courtesy and condolence, and were both apparently free from any trouble. A distinguished surgeon, an authority on genito-urinary diseases, was then called in consultation. To my great surprise he stated it as his opinion that the ulceration in the wife's case was non-specific, and only a coincidence; not at all the result of contamination from the husband, but from other and accidental causes, and advised continuation of application of the iodoform: if this failed to benefit, a change of air, a sea voyage. No improvement taking place in a week, the parties made a sea voyage of but five days, and, without other treatment, recovery practically took place within a fortnight.

LESSON XXVI.

DOES DIAGNOSIS OF CHANCROID REST UPON CHARACTER OF LESION OR ON ITS SOURCE.—ANALYSIS OF CASE IN POINT.

Inoculability not a sure test as to origin of lesion. Clinical case in illustration of the fact that the elements of destructiveness and contagiousness do not depend upon a specific virus. Mode of development of chancroid. Varieties of chancroid. Modifications from syphilitic influence.

In the previous lesson, the diagnosis of simple origin, of the apparent chancroid, was made, in the last case presented.

It is, however, very evident that if no lesion is to be accepted as a chancroid, unless proved to have arisen from contact with a lineal * chancroid, the specific nature of chancroid may be accepted as demonstrated. The diagnosis, then, in any instance, will not rest upon the character of the lesion, but upon its source. Thus in the case cited, according to this ruling we have not a chancroid. A suppurating sore occurs in a lady who never before had an ulcerative lesion of any sort; it makes its appearance on the urethral orifice a few days after contact with her husband, who has a sore on his urethral orifice, which appeared a few days after a contact with another woman, and was followed by a suppurating bubo. It looks like a typical chancroid; it behaves like it, in its destructive tendency, in its advance and its retrograde under treatment, and its final cicatrization after about two months' duration, under improved hygienic conditions, and yet it is not accepted as chancroid, and why? First, because it is clearly not the product of a lineal chancroid. This is, of course, sufficient for those who thoroughly accept the specific nature of the disease; but there are others, who decide this lineal matter by the inoculability or non-inoculability of

* *i.e.* Descended in unbroken line from the first chancroid as claimed by those who assert its specific origin.

its secretion. With them the production of true chancroid, by inoculation of a given secretion, proves that secretion to have come from a chancroid. Assertions to this effect, would appear to be the result of experience among the class most prone to suffer from the results of venereal dissipation, where probabilities are all in favor of chancroid having been acquired from contact with chancroid, and among whom the contagious element of the chancroid is kept by various influences up to a high point of activity.

There can be, however, no question that chancroid, proven of direct lineal descent from a typical chancroid, may be met, which is inoculated with difficulty and which is but feebly destructive; that in point of fact, chancroid descended from typical chancroid is seen of every grade of destructive and contagious power. Experiments have proved that the true chancroidal virus gradually loses its power by repeated inoculation, and also that various conditions of health may prevent the success of inoculations with fresh virus and under circumstances otherwise favorable. "Susceptibility to inoculation is impaired, or even lost, temporarily, during the occurrence of any febrile attack or great depression of the vital powers."*

Susceptibility is also *increased* by constitutional dyscrasia, of *various* kinds: thus the syphilitic dyscrasia, it is well known, predisposes to purulence. Typical chancroids, destructive and inoculable in generations, have been repeatedly proven to result from the inoculation of pus from an irritated syphilitic chancre, also from the purulent secretion of secondary syphilitic lesions, and also from scabies and acne. Baumler, a recent German authority, says: "According to its source and mode of its origin, as well as the *susceptibility of the individual affected*, will the pus poison and evince this (chancroidal) property, *in greater or less degree*. Whence the pus derives this property, in what it consists, and why all pus does not possess it alike, are questions yet to be solved."†

Inoculability, then, is not a *reliable* test as to the origin of a sore.

* Bumstead, p. 317.

† Zeimssen, Vol. III., Am. Ed., pages 94 and 95.

Again, inoculation of a leucorrhœal secretion, especially from a cervicitis, or a metritis, has been claimed capable in certain instances of producing inoculable sores. This is further proven by the following extract from a distinguished authority:

* "In March, 1840, a woman from the neighborhood of Arles, aged 22, and remarkably beautiful in form and appearance, was thoroughly examined, as was supposed, by Prof. Lallemand, and no symptom of venereal disease was discovered. This examination was made at the request of an officer, who complained that she had infected him. Several similar complaints being subsequently made by others, she was sent to the police station, where she was again examined by M. Delmar, in the presence of a considerable number of students. *The neck of the uterus still appeared healthy*, but on pressing it with the speculum it discharged a muco-purulent fluid, which was inoculated, in four places, upon the patient's thigh, *with the effect of producing four well-marked chancroids.*"

In this connection it will be interesting to recall the cases in the previous lesson, where ulcerated lesions on the penis resulted upon contact with virtuous women, who suffered only with sub-acute metritis.

How do these women differ from the beautiful woman of Arles, as to the character of these uterine secretions? Contact with them produces sores proven to have a contagious property. Must we then say that they are subjects of chancroid in the interior of the cervix, or uterus? The woman of Arles communicated *chancroid*, because she had a uterine leucorrhœa, and because she was a prostitute, not because she had a chancroid. The most rigorous and repeated examinations failed to find any chancroid upon her, and yet she was *the source of chancroid to others*.

The man, whose urethral sore communicated a similar sore to his wife's urethra, had not chancroid, because his sore was acquired from contact with menstrual fluid under circumstances of unusual excitement, from a lady of supposed virtue, and not from a prostitute.

The foregoing cases and remarks are chiefly intended

* Bumstead, p. 359. 3d Ed.

as a preface to the final and important statement, viz., that the elements of destructiveness and contagiousness in a venereal lesion are not, in my opinion, dependent upon a *specific* virus, but are engendered by various causes and conditions, and that, clinically, we shall have to deal with venereal lesions in every degree of activity, which activity will be found to depend as frequently upon the constitution and circumstances of the patient, as upon the variety and origin of the sore from which the chancreoid was derived. We may then say that

Chancreoid

1st. Begins as a destructive process, either upon a pre-existing lesion, or upon sound tissue. It is usually set up by contact with the purulent secretion of a *similar* destructive process, *which had a similar origin, or which may have been developed from a suppurative process of a lower grade.*

2d. The destructive process thus initiated (either upon sound tissue or upon a pre-existing lesion) proceeds steadily to the formation of a pustule, or an ulcerated surface, by a more or less rapid molecular necrosis. This necrosis, occurring under differing conditions, and in different localities, gives rise to characteristic forms of the chancreoid lesion, which may be described as follows, viz.:

1st. *The Chancreoidal Abrasion*; 2d. *The PUSTULAR Chancreoid.*

These may be again divided into the *slowly destructive* and the *actively destructive* varieties. We may have as modifications of these,

From Condition.	From Locality.
The Indurated Chancreoid.	The Follicular Chancreoid.
The Inflammatory "	The Papulo Pustular "
The Gangrenous "	The Ecthymatous "
The Phagedenic "	The Sub-Preputial "
The Serpigenous "	The Chancreoidal Bubo.
	The Bubonic Chancreoid.
	The Urethral "
	The Rectal "

The Ex-Ulcerous Chancreoid of Clerc, and the Ulcus Elevatum.

Modifications of all the foregoing forms and varieties by the *coincident development* of implanted syphilitic elements on the site of the chancreoid lesion.

LESSON XXVII.

ORIGIN OF THE CHANCROIDAL ABRASION.

Most frequent localities of chancroidal abrasion. Physical appearances. Pustular chancroid. Mode of origin. Clinical case in illustration. Chancroid divided into two varieties according to activity of destructive process. Cases in illustration. Character of chancroid dependent upon its source. Chancroid modified by various influences and causes.

Abrasions of mucous membrane are frequent as the result of violence during the act of coition: they occur most frequently about the fourchette and the vestibule of the female, and about the preputial orifice, and the frenum, and along the preputial reflection of mucous membrane in and behind the fossa glandis in the male.

All injuries of this character, on being brought into contact with the secretion of an active chancroid, are at once inoculated, and the suppurative action is thus initiated over the entire surface of the lesion. It is to the abrasion, thus complicated, that the term *chancroidal* is applied. To the naked eye it appears at first like a simple scratch or chafe, but an examination of its secretion shows abundant pus corpuscles, within three or four days, and often within twenty-four hours. By the aid of a good magnifying glass the advancing molecular necrosis may be seen, in the dentated edges, in the minute sloughing points on the surface of the lesion, and the secretion is inoculable. Sooner or later, in accordance with conditions which are known to render chancroidal lesions more or less active, the abrasion may be merged into the characteristic chancroid. Its shape, which at first corresponds with that of the surface inoculated, now changes, through the advancing ulceration. The edges become ragged and abrupt, the floor, excavated and covered with the débris of disorganized tissue, gives rise to a profuse secretion of pus. The time for these changes in different cases may vary from a few days to several weeks.

ORIGIN OF THE PUSTULAR CHANCROID.

The pustular chancroid arises either from the erosive property of the chancroidal secretions which have been deposited in the folds of integument or mucous membrane, or from the absorption of the secretion into the follicles of mucous membrane, which have been bathed in the secretion of chancroid.

The time of its appearance after contact varies from three or four days to eight or ten; and in certain authentic instances even longer.

The follicular starting point of the disease, assumed by Cullerier, Bumstead, Acton and others, has been substantiated by a case which came recently under my observation. Mr. W—— came to me complaining of having bruised his glans penis during a connection four days previous. On the morning following the indulgence the part felt very sore and was swollen and inflamed. These conditions had been gradually increasing in intensity, until he presented his case to me. I found the inferior portion of the glans much tumefied, from the meatus back to the fossa glandis, and for half an inch on either side of the median line (the frenum had been smoothly carried away by a chancroid ulceration, for which I had treated him a year previous). The injured part was swollen, and presented a smooth, shining surface of a deep red color. By the most careful examination, with the aid of a magnifying glass, I could not discover any point of abrasion or solution of continuity whatever. I advised a simple water dressing, slinging up the penis, so that engorgement from the dependent position of the organ might be relieved, and as perfect rest as possible obtained. He called on the following day, somewhat relieved, but in appearance the parts had not improved; the color was even deeper than on previous examination. A wash of lead and opium was substituted for the water dressing, and the patient advised to keep the recumbent position. On the next day, the third from his visit to me, and the seventh from the impure connection, he again presented him-

self. The tumefaction was much the same; the color had deepened and was now of a violet tinge, and I discovered, as though under a glass, numerous pale whitish points varying in size from a pin's point to a pin's head, occupying a space a quarter of an inch broad and one third in length on either side of the median line on the inferior aspect of the glans. Previous treatment was continued, and I saw my patient daily for three days following, making in all *ten* days from the connection. On the morning of the tenth day I discovered some half a dozen whitish points *just underneath* the mucous membrane; these were then opened into with a fine-pointed bistoury, and discharged minute quantities of pus. Under the magnifying glass, the little cavities left after the discharge of the pus were characteristic of chancroidal ulceration. In brief, all the points, some twenty or thirty in number, finally worked their way to the surface, occupying some three days longer, and they soon coalesced from the extension of the ulcerative process, resulting in a true chancroid, three fourths of an inch in length, by one third of an inch in breadth, occupying the site of the original white points. The first pustules were visible through the mucous membrane, but evidently deeper than its thickness, on the seventh day after the absorption. The first of these came to the *surface* on the tenth day, but it was not until the thirteenth that all had reached the mucous membrane on their outward march. Applications of the strong nitric acid resulted in a complete recovery in a few days. Occasionally single, chancroid is accompanied as a rule, or soon followed, by others, in the immediate vicinity or at different points. Commencing usually as a fine whitish speck, scarcely larger than a pin's point, it soon increases in size, and, unless occurring on an already inflamed surface, presents a distinctly inflamed border. Its progress (more or less rapid, according to circumstances and conditions which are known to increase or retard its activity) is by an acute ulceration, before which the tissues give way in irregular form, both at the edge and floor (as heretofore described in case of its advance from a previously

abraded surface), accompanied with more or less local inflammation and pain. Its progress, like that of the chancroidal abrasion, is variable. In typical cases, under circumstances of usual health and condition, reaching to the size of a five-cent piece, and penetrating to the depth of one or two lines, in the course of three or four weeks, while, under other circumstances, its depth and its extent may be greatly increased.

These peculiarities of the action of the chancroid are the same, whether beginning on an abraded surface or as a pustule, and warrant the division of chancroid into two forms previously noted, viz., the *slowly destructive* and the *actively destructive*.

To show you that this division is not simply a technical one, I will recall four cases presented to you at our last two sessions, which illustrate the validity of the distinction.

CASE I.—Wm. B., waiter, about 25 years of age, gave a history of exposure through vicious sexual contact, eight weeks previously. Four or five days after, he noticed several white pimples on his prepuce behind the *fossa glandis*. He touched them with "blue stone" from time to time, and after a week, others came on his glans penis. He then used a wash and kept them clean, but they refused to heal until he went to Charity Hospital, about a week ago, seven weeks, after their appearance. Here the sores on the prepuce were cauterized, on several occasions, with nitric acid, also three about the size of a pea on the glans. His general condition as he came before us was fair, not rugged. He presented several superficial cicatrices on the internal reflection of the prepuce, and a raw surface about the size of a three-cent piece, yet unhealed, but granulating well. On the glans, were three fresh cicatrices, which, as I was careful to show you, matched exactly upon three distinct cicatrices on the prepuce when drawn forward. This case I presented as chancroid of the first variety; demonstrated as slowly destructive and also contagious, as proven by auto-inoculation.

CASE II.—A blacksmith, aged 45, was shown you in

contrast. A large pallid man, evidently in low condition. Just two months before, he also had a connection, and no trouble resulted for the next ten days, when his attention was attracted to his penis by soreness. He then discovered three inflamed pimples, one on a redundant prepuce and two on the body of the penis. These progressed steadily, and thinking they were simple boils, he neglected them until the scabs came off a few days ago, when he found deep ulcerations in their place, each as large as a dime. He was admitted to Charity Hospital, and the sores, which were recognized as typical chancroids, were cauterized with nitric acid. When shown to you, three days after, they were still of same size before mentioned, and fully one fourth of an inch deep, penetrating fully and sharply the swollen integument. This case was presented as illustrating the *actively destructive* variety of chancroid. With much the same history as the first, it was yet seen to be in marked contrast with it in regard to the activity of the destructive process. There was no history of any antecedent syphilis in either case.

CASE III. was of a lad of twenty. He was in good health, history of an impure connection four weeks previously. A pimple near the frenum appeared five or six days after; this he treated with repeated applications of "blue-stone," and it healed in a couple of weeks, having carried away the frenum. A soreness of the right groin then set in, and culminated in an abscess; this I opened before you, discharging about an ounce of unhealthy looking pus.

Both its appearance and course were spoken of as characteristic of the chancroidal bubo. The locality of the original sore was pointed out, as one most liable to be followed by such an accident, inasmuch as the lymphatic vessels, connecting this point with the glands of the groin, are known to be numerous and superficial. No other cause for such a complication could be elicited.

CASE IV. presented to you last week came to our clinic the week previous, too late in the hour to be available as an example. The young man, 25 years of

age, gave a history of impure connection the week previous, and had just discovered a little sore just within the urethral orifice. A little feeling of hardness associated with this sore and the long interval since the connection, gave rise to suspicion of syphilis. In order to clear this up, two inoculations were made under the left nipple of the patient by Dr. Bangs, our chief clinical assistant, and the patient was ordered to report on the following Saturday, two days after; this he failed to do. He was presented to you one week after, with a sore that had penetrated fully one third of an inch, and had completely carried away the right side of the meatus, exposing the urethra for that distance. The attempted inoculations, as shown you, were wholly abortive, although as I saw them one half hour after the puncture, they were surrounded by a congested areola half an inch in diameter.

This case I presented as demonstrating several points: 1st. The long interval of apparent incubation. 2d. The slow progress of the lesion up to the week previous, thus marking it as belonging to the slowly destructive variety of chancroid, if it were chancroid. 3d. The sudden change from the slow to the actively destructive variety. 4th. The failure of a carefully performed inoculation of the secretion of the lesion upon the person of the patient, thus going to prove that a destructive chancroid may under certain conditions fail to give an affirmative proof by inoculation, as claimed by Böck and others.

Now while I do not present these cases as absolutely proving the points I desire to illustrate, as there may be various valid objections urged against them, yet I claim that they form links in a chain of evidence showing that chancroid is of variable quality and force, and also that the quality and force is determined not by any specific virus but by circumstances and conditions. It will be well for all who study and treat this disease, to be cognizant of this, and to consider the causes which are known to effect the degree of destructiveness and contagiousness in each case, instead of attaching too great importance to the dogmatic and unsupported

assertions, of those who claim one continuous lineal descent, for all inoculable and destructive venereal sores.

It may, I think, be safely claimed that the character of a chancroid is greatly dependent upon the degree of activity of its immediate predecessor, and that it may itself be modified or intensified by the following influences:

1st. General condition of the person so inoculated, especially in relation to any diathesis or dyscrasia.

2d. Locality of the inoculation.

3d. Influence of alcoholic stimuli, low and irregular living, etc.

4th. Local sources of irritation, such as standing at work, walking, or horseback exercise, indulgence in coitus, uncleanness, etc.

5th. Application of external irritants, administration of internal medicines, especially mercurials.

For the convenience of description, various names have been applied by authors to designate the several modifications of chancroid. These have been already cited, and will be seen to fall naturally under two heads, as modified by condition and locality.

LESSON XXVIII.

MODIFIED BY CONDITION.

Chancroid modified by condition. Characteristics of simple chancroid. Induration produced by irritation. Differentiated from syphilitic induration by results of treatment. Inflammatory chancroid. Description of. Causes of. Gangrenous chancroid. Causes of. Characteristics of. Phagedenic chancroid. Definition of. Characteristics of. Cases in which it usually occurs. Serpigenous chancroid. Description of. Causes of.

FIRST: THE INDURATED CHANCROID.

The uncomplicated chancroid has a soft base and edge differing in suppleness but little, if at all from the surrounding tissue. In this condition we have a valuable diagnostic mark separating chancroid from the initial lesion of syphilis, which, in typical cases, presents a distinct induration of the tissue on which the lesion is located. Venereal sores often present, however, about which a varying amount of induration is present; not seldom occurring at an early period in a chancroidal lesion, before the loss of substance is well marked, or coming on later, in a well-marked chancroid, giving rise to suspicion of underlying syphilitic action. It is well then to understand, that such induration may result from any form of irritation, and may be a purely inflammatory aggregation of cell material. Chancroids thus complicated are termed *indurated*. The test of the nature of the induration, in any case, is by simple treatment. If the induration is thus rendered more dense and sharply defined, it will prove, as a rule to which there are few exceptions, that it is the result of true cell growth caused by the syphilitic influence, and that the lesion is either the initial of syphilis complicated by accidental ulceration, or that it is a true chancroid complicated with syphilis.

If, on the contrary, the induration disappears wholly under the influence of rest and local sedatives, and the

sore heals without subsequent induration, it is of an inflammatory character, and the lesion so complicated is proven of purely local nature, and has thus been but an *indurated chancroid*.

SECOND: THE INFLAMMATORY CHANCROID.

Instead of becoming indurated under various causes of irritation as in the previous variety, the tissue surrounding and underlying the chancroid may become more tender and swollen, assuming a puffy appearance, and the surface more intensely red and extended.

This condition may supervene upon any stage of chancroid, whether slowly progressing or healing, and is the evidence that a more rapid destructive action has been initiated, or is imminent.

The same condition may obtain, on the early appearance of the chancroid, as a result of intensity in the secretion inoculated, or from constitutional taint, excess, sexual and alcoholic, as well as from local irritation.

THIRD: THE GANGRENOUS CHANCROID.

This is but the fruit of the unrelieved inflammatory form, usually the result of interference with the circulation of the part by swelling and inflammatory infiltration of the tissues, in which case, sloughing of contiguous structures occur *en masse*; especially is this apt to take place in debilitated and dissipated subjects. When occurring upon persons in good condition, it is the result of some mechanical constriction, as in case of sub-preputial chancroids complicated with phimosis.

The occurrence of gangrene, in such case, once announced by the fœtid odor, if not arrested by treatment, will require but a few hours for the deep red surface of the inflamed prepuce to turn black, and the slough to disintegrate and separate from the living tissue, at or near the line of constriction. The effect of the gangrenous accident, is to destroy all contagiousness in the associated chancroid, and the parts heal, after the falling of the slough, as if no such complication had been present.

FOURTH: PHAGEDENIC CHANCROID.

This term is usually applied to all chancroids which progress with unusual rapidity. Hence it is made to include all degrees, from the inflamed chancroid, to that form in which a sloughing of tissues takes place *en masse*. Instead of a simple death of tissues through arrest of circulation, it is the result of an added destructive element, in some respects similar to that which causes hospital gangrene. It is characterized, in the milder forms, by gradual advance in destruction of tissues, in spite of the ordinary treatment, and of circumstances favorable to recovery; still further by the occurrence of a putrefactive change. This is heralded by a mawkish and, finally, by a distinctly gangrenous odor and an increasing rapidity of the destructive action in all the dimensions of the lesion, involving any and all tissues and vessels. Progressing in aggravated cases with great rapidity; destroying important parts even within a few hours. Accompanied, whenever the loss of tissue is at all considerable, by pain often very great, and by more or less general constitutional disturbance. This grave complication, is confined almost wholly to subjects of intemperate habits, who have also been subjected to low conditions in living, although it may take place in persons who, while living under favorable hygienic conditions, are of scrofulous habit; or it may be the result of contamination from the secretion or exhalations from similar processes.

FIFTH: THE SERPIGENOUS CHANCROID.

This a variety of the phagedenic, which is quite independent of any tendency to sloughing or gangrenous action, and is confined solely to the integument. It is recognized, in its early stage, by obstinate resistance to treatment. Progressing very slowly, and superficially, healing on one side under treatment, while progressing on the other; healthy-looking granulations springing up here and there—even little islands of healthy-looking tissue appearing, apparently as the result of some effi-

cient application, and then melting away under its continuance. Finally, in certain cases, creeping over large tracts of integument, the groins, perineum and buttocks, and in forms which have suggested the name of this complication. The secretions of this variety of sore are thin and copious, but not inclined to form incrustations. They have the power of producing a chancroidal sore by auto-inoculation. It does not necessarily produce the serpigenous variety when inoculated upon other persons. The subjects of this accident are usually of a scrofulous diathesis.

The modifications of chancroid, from locality, are chiefly important in regard to treatment.

LESSON XXIX.

DIAGNOSIS AND TREATMENT OF CHANCROID.

Difficulties in diagnosis. May be confounded with herpetic lesions. Treatment of. Modified by condition. Reasons why insignificant lesions often require great consideration. Management in early stage. Treatment by excision, by cauterization. Best methods described. Character of subsequent treatment. Various applications. Diagnosis and treatment of the indurated chancroid, of the serpigenous chancroid, of the follicular chancroid, of the papulo pustular variety, of the ecthymatous form. Diagnosis and treatment of sub-preputial chancroids. Possible source of error in diagnosis.

When seen in the earliest stage—viz., the Chancroidal Abrasion—it is difficult, and often impossible, to decide whether it is the result of irritation through some vicious vaginal secretion or lesion other than chancroid, or not. Hence all lesions, first seen as abrasions, should be treated tentatively, until the characteristic chancroidal ulceration surface is developed. A mild, astringent sedative lotion, say three grains of the acetate of lead to the ounce of rose water, may be applied on a thin film of borated cotton three or four times a day. If the lesion is a pustule, and has made its appearance a day or two, or three or four after exposure, it may be of herpetic origin. A single herpetic pustule is not very common. A solitary pustule, following five or six days after a suspicious connection, is more apt to be chancroid. Careful examination will sometimes detect one or more little vesicles, or their remains, in the immediate vicinity of the pustule. This warrants the inference that the pustule had its origin in a vesicle, and was thus of herpetic nature and not chancroid, which always *begins* as a pustule. We may venture, in such case, to expect that simple treatment will suffice, especially if to this is added rest and freedom from irritation of every kind. Nothing is more essential, in the treatment of any inflammatory lesions, than rest and cleanliness. This is eminently true of chancroid, and all the lesions that may be mistaken for it.

If the suspected lesion *increases*, in spite of rest, cleanliness and a mild sedative lotion, it is safe to include it at once under the class Chancroid. If it is inclined to be superficial and sluggish, we will designate it as of the slowly destructive variety, and treat it with a solution of sulphate of iron, applied on a film of cotton two or three times daily. This, or an application of a mild solution of carbolic acid, is often promptly curative. If there is much redness or tenderness, the watery extract of opium may be added, thus :

℞ Ferri Sulph. grs. X.
Ext. Opii Aq. grs. X.
Aq. ad. ℥ i.
M.

℞ Acid Carbolic, grs. V.
Sol. Morph, U.S.P. ℥ i.
M.

The general condition should also be considered. If there is reason to suppose the patient especially inclined to suppurative trouble from scrofulous diathesis, or from general debility, or personal idiosyncrasy, in addition to any measures addressed to the general health, it may be well to administer small doses of the sulphide of calcium, $\frac{1}{10}$ gr. every two hours, either in freshly made solution or in parvules. These measures, even in the very slight forms of suppurative lesion (which are oftentimes difficult to distinguish whether of true chancroidal origin or not), will in some cases be found worth considering and adopting. Many cases of most insignificant character, in a surgical point of view, cause great anxiety and mental suffering, and should be met, at the outset, with the greatest consideration from the surgeon, not only because of conditions present, but because of the *possibilities* that these innocent-looking lesions may hide the progress of a syphilitic inoculation. If under the above mentioned mild applications, the sore (or sores, as there are commonly several) heals rapidly or slowly, and, finally, cicatrizes completely, it is yet most important to keep in mind the fact, that sometimes, just such lesions, even weeks after an apparent cure, begin slowly to in-

durate and finally demonstrate that a syphilitic infection has been initiated. It is by no means infrequent that such an accident occurs under cover of a supposed chancroid or an herpetic eruption; or an abrasion irritated into seeming viciousness, by simple vaginal secretions, or a want of cleanliness or care.

If, however, the lesion shows early, that it belongs to the actively progressive variety of chancroid; if it becomes sensitive, and progresses in depth and extent, with undermined and irregular edge, and worm-eaten, sloughy floor (and this may often be seen under a good magnifying glass a short time after its appearance), active measures are often promptly curative. If the ulcer is situated on the free margin of the prepuce, it may sometimes be removed by excision—previously cleansing the parts with a 10-grain solution of carbolic acid—and cutting through the entire thickness of the prepuce, then stitching the edges together. Union by first intention may thus be secured. Great care will be necessary to prevent inoculation of the cut surfaces, *in which case, the chancroid will be greatly increased.* When situated on the reflection of the prepuce, or in the fossa glandis, or on the glans penis, or in the vicinity of the frenum, or in any locality on the male or female genitals, where they may be thoroughly and easily exposed, and when the inflammatory action is not great, the complete destruction of the chancroid—one or more—should be effected at once. The best and most convenient means is by application of the strong nitric acid. The solid nitrate of silver stick is often used for this purpose. This is not sufficiently powerful to be depended upon. The actual cautery is excellent, but formidable, requiring ether, to be well borne. The nitric acid may always be at hand, and is, when well applied, thoroughly efficient in the great majority of cases. A convenient method of application is by means of a film of cotton, wound upon the point of a sharpened match or a wooden toothpick, using only enough to hold a drop or two of the acid. It may thus be carried to the surface of the chancroid without danger of dropping on healthy tissues. Apply freely and let it soak in, until the floor and edge

are completely saturated, repeating the application, if necessary, until this is effected. A small chancroid requiring a minute or so, but one the size of a dime may require several. If favorably situated, the size of the lesion does not contraindicate the attempt to destroy it in this manner. When the saturation with the acid is complete, a bit of cotton, soaked in a solution of acetate of lead and extract of opium—10 grains each to the ounce of water—may be applied. If the sores are multiple, or large, placing the patient under the first effect of ether, for the application, is very desirable. The resulting slough, usually falls off within from three to five days, and, if the application has been effectual, a healthy granulating surface will be left. This heals readily under the slight stimulation of a weak solution of carbolic acid—5 grains to the ounce. Should the ulcerative action show a disposition to return, a second application may be made. This may even be required a third or a fourth time, if great care has not been taken to destroy all the tissue involved in the chancroidal process. If, instead of active destructive action, there should simply be a sluggish and unhealthy condition of the sore remaining, this will be best treated by applications of iodoform in powder or in combination with equal part of vaseline:

R	Iodoform, 3i.	or	Iodoform, 3i.
	Vaseline, 3i.		Balsam Peru, 3i.
	Oleum Rosæ. X.		M.
		M.	

If the secretion is very profuse, 10 grains of tannic acid may be added. The odor of iodoform is often an insuperable objection to its use. The addition of balsam Peru, or a few drops of any of the essential oils—lavender, bergamot, neroli—or ten grains of thymol to the dram of iodoform, will sometimes make it endurable. But the best deodorizer for iodoform that I have found is the oil or attar of roses, in the proportion of one drop of the oil to 3i. of iodoform. Nothing favors the best results of applications, and the most rapid healing, so effectually as complete rest of body and mind.

DIAGNOSIS AND TREATMENT OF THE INDURATED CHANCROID.

One of the chief diagnostic points in chancroidal sores, is the freedom from positive induration; a suppleness of the tissues on which they are situated. A certain degree of induration, however, may be present from irritant or even astringent application, or friction by the clothes of the patient, raising the question as to whether or not this is the result of syphilitic infection. In such cases the sore should first be treated by removal of all irritating surroundings, by rest, and an application of the lead and opium dressing. If the induration is not syphilitic, it will pass off under this treatment, when the destructive method may be pursued as previously indicated.

The neglect of cleanliness, undue exercise, long standing position or irritant applications, irregular hours, or alcoholic excess, especially in persons of dissipated habits and low general condition, often causes a highly inflammatory condition of the chancroid. The immediate result of this, is to increase pain and swelling of the tissues in the vicinity of the chancroid, and to accelerate the destructive action. Soaking the parts with opiated water as hot as can be borne, and as continuously, with attention to the general care of the patient, is the most prompt way of reducing this complication. If the lesions are upon a female, prolonged hot sitz baths are essential.

DIAGNOSIS AND TREATMENT OF THE PHAGEDENIC CHANCROID.

If relief does not follow, the phagedenic condition may be superimposed upon the inflammatory. Still more rapid, destructive action with putrescent odor, the true "molecular gangrene" takes place as alluded to in the previous description of this form of chancroid. When rapid destructive action is thus set up, and important parts are threatened, a prompt and thorough soakage of the shreddy, pultaceous, sloughy surface with strong nitric acid, is indicated, or, better still, an application of

the actual cautery, repeated from time to time, until, by application of hot water, or by the aid of charcoal poultices, the slough is removed. Free use of the iodoform in powder is also efficacious, not only for its disinfectant but for its anæsthetic effect. The pain in rapidly destructive lesions of this sort is often very great, and the internal administration of opium acts beneficently. Twenty-grain doses of the potassio-tartrate of iron, as recommended by Ricord, may usually be administered to advantage. At Charity Hospital, the treatment by immersion in hot water by means of the sitz bath, with the water kept up to 100 F., has proved one of the most effective adjuvants in the treatment of sloughing phagedena in females, (in whom applications are usually most difficult,) keeping the patient in for even ten or fifteen hours consecutively, and practically the same method for males.

DIAGNOSIS AND TREATMENT OF THE SERPIGENOUS CHANCROID.

This is notably the most rebellious to remedies of all the forms of venereal lesion. The size to which it insidiously attains under the usual treatment for superficial slowly destructive chancroids, (iodoform, carbolic acid, etc.,) is apt to cause a hesitation in resorting to applications of nitric acid, acid nitrate of mercury, or any of the destructive agents in ordinary use for the treatment of chancroids. The apparently healthy granulations which spring up in the sore, and which often go on to production of new integument at one side, even while it is slowly melting away at the other, flatters the surgeon into the belief that mild measures, with appropriate constitutional treatment, will finally effect a healing. The result is, that serpigenous chancroids are occasionally met which have existed for years, and have come gradually to occupy many inches of surface.

Especially is this seen in females, where the groins, the perineum, the entire vulva, the vaginal walls, the rectum, and the integument around the anus, may be continuously involved. Few venereal hospitals, or out-door

departments, are without specimens of this sort. Passing usually under the title of *chronic chancroid*, (to which a suspicion of obscure syphilitic constitutional vice is usually attached) they finally, in most cases, cease to receive any especial surgical care, and are often relegated to the class of incurables. The actual cautery is the one and only effectual remedy in the treatment of serpigineous chancroid, no matter what the size or locality. Placing the patient under the influence of an anæsthetic, thoroughly apply at a white heat the cautery iron, or the platinum point of the gas, or the galvanic cautery, over the entire surface, following down into every crypt and sulcus, with the same animus as if dealing with a well-marked case of *lupus excedens*. Follow up with hot water immersions, sedative lotions, iodoform, etc., until the slough has separated, and as long as the new surface appears in satisfactory condition. If a retrograde is threatened, re-apply the cautery, as often and as long as is necessary. This will not usually be required oftener than once in one or two weeks. Several cases within my experience, that had been considered beyond the reach of surgical aid, were, in this way, finally brought to a complete cure.

The modifications of chancroid from location are noteworthy: first, in regard to diagnosis; second, in regard to treatment.

DIAGNOSIS AND TREATMENT OF THE FOLLICULAR CHANCROID.

This commencing apparently underneath the mucous membrane, may quite readily escape observation, especially when it commences deep in the substance of the follicle. The inflammatory swelling and redness often precedes the appearance of the pustule several days.

DIAGNOSIS AND TREATMENT OF THE PAPULO-PUSTULAR CHANCROID.

This is most often seen on the integument of the labia majora, and the mons veneris, of females. They are usually

sluggish in character and quite inclined to burrow. They originate in a follicle, and are occasionally quite numerous, a dozen or more appearing at about the same time, and usually in connection with previously existing chancroids of considerable size, within or about the vulva. No applications have any effect which are not preceded by removal of the small scab and discharge of the contents of the pustule. After this, the treatment may be by prompt destructive agents, or by iodoform. If they are not discovered and treated early and effectually, the probabilities are in favor of coalition of the pustules, extension of the chancroidal process, and a stubborn persistence of the trouble.

DIAGNOSIS AND TREATMENT OF THE ECTHYMATOUS FORM OF CHANCROID.

This is covered by a broad thin brownish scab, is usually on the integument of the penis or on the thigh, and may be mistaken for a simple herpetic lesion. Removal of the scab shows the characteristic chancroidal appearance of the edge and floor of the sore. Very often it belongs to the slowly destructive variety of chancroid, penetrating the thickness of the integument, or nearly so, but without much tenderness or surrounding inflammation.

Treatment by prompt destruction of the diseased tissue, if active. If sluggish, application of iodoform, pure, or in combination with tannin, or balsam Peru, or by carbolic acid and glycerine, equal parts, applied in the same way as directed for use of strong nitric acid. For the same purpose, a solution of permanganate of potass, 2 grs. to the ounce of water, or sulphate of copper, 2 to 5 grs., may be applied on a little borated cotton or lint. This if on the penis should be protected by a thin wrapping of oiled silk, retained by a narrow cotton bandage, the end of which may be conveniently split into four tails, brought around, and tied.

DIAGNOSIS AND TREATMENT OF SUB-PREPUTIAL CHANCROIDS.

These require especial instructions for management,

only when, on account of the narrowness or swelling of the preputial orifice, they cannot be readily exposed. If the phimosis is congenital, the existence of sub-preputial chancroids may be inferred by more or less swelling and tenderness following a suspicious sexual connection. The two difficulties with which they may be confounded are, balanitis and initial lesion of syphilis. Mild astringent sub-preputial injections, as, 5 gr. solution carbolic acid, 10 gr. solution of sulphate of iron, or the lead and opium solution, may be used. If the phimosis is inflammatory, persistent soakage of water as hot as may be comfortably borne will also be required. If the reduction of swelling finally permits exposure of the affected parts, they may be treated according to conditions presenting. If, on the contrary, the swelling and sensitiveness increase, and blood is mixed with the secretion—and this in spite of rest and fomentation—no time should be lost in slitting up the prepuce on the dorsum, previously syringing out the preputial cavity with a 10 grain solution of carbolic acid. The division may be done with the bistoury, and the cut surfaces thoroughly dried and cauterized with pure carbolic or nitric acid. But the best way of dividing the preputial tissue in such case is by introducing a bit of pure platinum wire, perforating the prepuce at the base of the glans superiorly, and attaching it to the galvanic cautery battery and drawing it slowly through the intervening tissues. A small wooden tube, wetted, may be slipped over the wire to protect the glans. Should the lesion be situated on the inner surface of the prepuce, or should the slitting not expose the whole diseased surface, the circumcision may be completed with the wire, or with a bistoury if preferred.* Should the lesion prove to be chancroid, the danger of inoculation of cut surfaces is always great,

* A case of threatened sloughing of the prepuce from chancroidal action in its interior, occurred in my service at Charity Hospital not long since. The swelling was enormous, and extensive destruction of tissue was imminent. The whole prepuce was removed by means of the galvanocautery wire, without hæmorrhage. Several chancroids in the fossæ glandis were cauterized at the same time. The case went on to a rapid and complete recovery under antiseptic and simple applications.

no matter what are the precautions taken ; but the danger of damage to the glans penis, through the chancroidal action, if not arrested, by relieving tension and by potent local application, is so great that the inoculation of the entire cut surfaces is a lesser evil. The after-treatment of the circumcision, under such circumstances, is the same as ordinarily pursued, until some evidence of chancroidal action is manifest. In this and in the chancroids or other lesions which may be left on the glans or elsewhere, the same application already described for the lesions on open surfaces, will be required. It must not be forgotten that an initial lesion of syphilis, irritated by confined secretions, may simulate a chancroid in the inoculability of its secretion, and that a chancroid may be irritated so that induration shall be present, simulating that of the initial lesion of syphilis. Previous instructions as to diagnosis in such doubtful cases will guide.

LESSON XXX.

DIAGNOSIS AND TREATMENT OF CHANCROIDAL BUBO
AND BUBONIC CHANCROID.

Manner in which these lesions occur. Definition. Usual teachings in regard to the chancroidal or virulent bubo. All buboes, not syphilitic, which do not suppurate, claimed as sympathetic or scrofulous. Phagedenic buboes. All sores which give rise to suppurating buboes not necessarily chancroidal. Early treatment of gland swelling associated with chancroid. Calcium sulphide an efficient agent in arresting the suppurative process. Statistics in proof of this. Later treatment. Rest in bed important. Danger of extension of trouble through formation of sinuses. Signs of such accident. Treatment necessary to their arrest and subsequent cure. Chancroids of the anus and rectum. Usual mode of advent. Aids to diagnosis. Modes of treatment. Chancroids of anus and rectum. Mode of origin. Aids to diagnosis. Modifications of treatment to meet varied conditions. General remedial measures when local remedies prove inefficient. The exulcerous form of chancroid the mildest type. Mode of treatment. The ulcer elevatum not a true chancroid. Mode of treatment. Modifications resulting from the union of the contagia of chancre and chancroid. Syphilitic disease more likely to be associated with the milder forms of chancroid. Frequency of this accident. The term mixed chancre a misnomer. No mixing possible. Each disease always independent of the other, and always of necessity antagonistic. Possible development of the initial lesion of syphilis after the healing of a chancroid.

Inflammation of lymphatic glands in connection with chancroid is not uncommon. The tumors, thus occurring, are termed *chancroidal buboes*. The inflammation is set up in such glands through the passage of the pus of the chancroid through a lymphatic vessel. Inflammation is immediately set up in the substance of the gland, which soon swells and becomes painful. Swelling of a lymphatic gland, from any cause, is usually called a bubo. Painful swelling of a lymphatic gland with inflammation, finally extending to the integument covering it, is termed an *inflammatory bubo*. When the inflammation is set up by inoculation, through the lymphatic vessels in connection with chancroid, it is termed a *chancroidal* or *virulent bubo*.

When an inoculation is thus effected, suppurative action is set up which (it has been taught as a rule to

which there is no exception) goes on to the formation of an abscess, and steadily progressing, in the course of two or three weeks, sometimes longer, finally finds its way through the parenchyma of the gland and the overlying integument. When this is effected, the lesion is called an open chancroidal bubo, or a bubonic chancroid. The purulent product of this lesion is, if not identical, analogous, in character, to that of the original chancroid.

This accident may be initiated at any period in the course of the chancroid, from its first appearance as a small suppurative point, throughout its existence. This is a strong argument in favor of the early and thorough destruction of chancroid. The activity of the suppurative process in the gland, bears a tolerably definite relation to that of the lesion from which it originates. When the source of the pus is active, virulent, it is not probable that any course of treatment, local or general, will prevent its termination in open bubo or chancroid. Where glands, associated with chancroid, inflame and yet do not go on to formation of abscess, or when abscess is thus formed and its contents are absorbed through treatment, local or general, it may be claimed that the chancroid, from which it is derived, is of mild type. It is, however, the habit of surgeons to classify all buboes (not syphilitic) which do not suppurate, as sympathetic or scrofulous.

Those resulting from irritation and not from inoculation, are termed sympathetic buboes. Whenever, through suppurative process, or by surgical interference, the chancroidal bubo is open, it goes on to exhibit the diagnostic appearances of the original chancroid. Pus secreted by it, when inoculated at other points, or on another individual, produces the characteristic chancroid.

When the lesion from which it is derived, assumes the phagedenic form, the danger of extension of phagedenic action, to the bubonic chancroid, is imminent. Phagedenic action may also be set up in a bubonic chancroid after the original chancroid has healed. In such case the treatment should be the same as that pre-

viously directed (p. 244) for the phagedenic chancroid.

The earlier the destruction of a chancroid is effected, the less the danger of a complication through medium of the connecting lymphatic vessels. This accident seldom affects more than a single gland, and that usually in the groin, corresponding to the side on which the chancroid is situated. Occasionally, however, through intercommunication of lymph canals, it may appear in the opposite groin, even in both groins. A sore of very mild type may give rise to a bubo which may go on to suppuration. All sores which give rise to abscess of lymph glands are not necessarily of chancroidal origin. It is only by the activity of the contagium and of the inflammatory and destructive processes, exhibited in the inguinal lesion, that we can decide in what grade to place it.

It is safe, at first, to treat all inflammatory gland swellings in connection with chancroid, as if they were of simple origin, that is, by rest in the recumbent position, by local sedative applications, and at once to begin the use of the sulphide of calcium internally, giving parvules $\frac{1}{10}$ gr. every hour or two, or using a solution made fresh every day—

R Calx Sulphurata..... grs. 2.
M. Aq..... 3 iv.

A teaspoonful every hour or two. Also using pressure (when it is well borne), by means of a compressed sponge, retained by a spica bandage, and moistened with the *lotio plumbi et opii*. If pressure is productive of pain, and this continues after it has been on for a little time, cold applications, even the ice bag, will usually give comfort, and, later, allow the pressure. If the feelings of the patient permit, the cold may be maintained and in some cases abort the bubo. Tincture of iodine painted on morning and night is also valuable, if the patient cannot take the rest required for other treatment. It has the advantage of being easily kept in place, and the popular credit of favoring abortion where this is possible, and when this cannot be hoped

for, of favoring suppuration. The early evacuation of the resulting abscess is usually advised. My habit, formerly, was to introduce a bistoury and make a free incision parallel to the long axis of the tumor at the earliest recognition of positive fluctuation. My later experience with the sulphide of calcium, administered internally, has caused me to delay operative interference until inefficiency of the sulphide of calcium has been fairly demonstrated.*

Once the bubo has been laid open by an incision, extending through its long diameter, it will be usually sufficient to pack the cavity with cotton or lint saturated with the ordinary tincture of iodine. This is a good styptic and has sufficient cauterant property to destroy

* If suppuration, going on to the production of an open lesion, is inevitable, undoubtedly it is wise to encourage it, to evacuate the virulent product at the earliest moment, and thus afford access for efficient treatment for the destruction of this new formed chancre. For this reason I had been an earnest advocate for early incision into suppurating buboes associated with chancre. My experience in the few cases above alluded to, however, made me incline to the belief that a thorough and extended trial of the sulphide of calcium, in cases of inflammatory buboes associated with chancre, might give such results as to make its use imperative in every such case.

In order to gain further light on this important matter, a systematic use of the calcium sulphide was made, in my service at Charity Hospital, in eighteen consecutive cases of inflammatory bubo occurring with, or as the immediate sequel of, well-pronounced chancre. All the facts, considered of importance, were noted by myself and under my direction by Dr. Johnson, my House Surgeon.

Out of eighteen cases of inflammatory bubo presenting the rational evidences of chancreoid origin, and treated systematically by the use of small doses of the sulphide of calcium, resolution occurred in fifteen, and in only three cases was incision ultimately required. Applications of tincture of iodine and systematic compression were also employed in every case.

If we apply to these cases the usual rule that chancreoid buboes always eventuate in chancreoid abscesses, always suppurate and require evacuation by natural means or surgical procedure, then we must hold that only three out of fifteen cases of inflammatory buboes associated with chancre were the result of transference of the suppurative process from the chancreoid to the adjacent lymphatic gland. It is just possible, however, that the influence of the sulphide of calcium may, in arresting suppuration, extend to the true chancreoid bubo. The apparent successful use of this drug in the series of cases herewith presented, at least suggests, and invites, a trial of its efficacy in all instances of threatened glandular suppuration, whether of purely sympathetic origin or associated with chancreoid.

the chancroidal contagium and stimulate the abscess cavity to healthy granulation. Iodoform may be substituted if the iodine is objected to on account of pain; the pain caused by it, however, is very commonly transitory. Rest in bed is essential after the opening of the bubo, and until healing is well advanced, on account of the tendency to burrow, which abscesses in the region of the groin are wont to exhibit. The announcement of such an accident, is often, through a sharp rise of pulse and temperature, while the pain in the vicinity of the burrowing may be very slight. Whenever fever suddenly starts up in a patient suffering from an inguinal abscess or sinus, even when nearly healed, it is an almost certain sign of the formation or extension of a sinus, usually at the most dependent portion. In this event, after ascertaining its full extent by probing, in every case slip in a grooved director to the very bottom of the sinus, and if its direction is such as to make it surgically a proper thing to do, pass in a blunt curved bistoury and cut out—being careful not to leave a little pocket at the bottom. Injection of tincture of iodine may be made to advantage when cutting is not considered feasible. For the same purpose, a silver probe, dipped in nitric acid, (which forms a coating of nitrate of silver), may be conveniently applied by insertion of the probe. When possible, in cases where it is not considered judicious to lay it open throughout, the sinus should be drained by a counter opening, and, if suppuration is extensive, drainage effected by small perforated, rubber tubes, or carbolated threads. If not treated with promptness, extensive sinuses may form, requiring months to heal.

DIAGNOSIS AND TREATMENT OF THE URETHRAL CHANCROID.

A slight smarting on urination, or purulent discharge, appearing at the urethral orifice, six or eight days after impure connection, is suggestive chancroid of the meatus. Especially is a little blood in the discharge valuable as a diagnostic point—careful examination should

be made at once. This form is quite common, and is usually slow in its progress. If the tissues at the lower part of the contracted orifice are very thin, as is often the case, snipping them with a pair of blunt scissors will sometimes permit free application to the lesion without greatly increasing the surface thus exposed to inoculation. The use of a meatoscope, or a Toynbees ear speculum, will be of service in making examination and application beyond the orifice where, fortunately, chancroids are seldom met. If seen early, and the meatus is of sufficient size to expose it wholly, after cleansing with a weak carbolic lotion, and the part made properly dry, it should be thoroughly destroyed with nitric acid (after the manner described for small chancroids in other localities), subsequently dressing with a little thin linen wetted with a sedative lotion, or by small suppositories composed of equal parts of iodoform and cocoa butter. If the entire surface of the lesion cannot be exposed, treatment by iodoform suppositories will be best, using frequent hot water soakage, and insisting upon absolute rest.

DIAGNOSIS AND TREATMENT OF CHANCROIDS OF THE ANUS AND RECTUM.

These may occur as a result of connection *a posteriori*, or from inoculation. This accident, through chancroids previously existing in the vicinity, is suggested by pain in defecation and purulent discharge. The introduction of the finger may be sufficient to make out a diagnosis, but the short rectal bivalve speculum, with narrow blades, will give access, when required, for diagnosis and treatment. But little especial treatment will be required, beyond that already suggested for other varieties. Cauterization to be made use of when called for; and absolute cleanliness insisted on.

If great difficulty and pain are experienced in introduction of necessary instruments and dressings, or if the lesion is penetrating the tissues rapidly, or is rebellious to treatment, the external sphincter may be divided *through the lesion*, and the cut surface treated, together

with the chancroid, by application of iodoform and tannin suppositories, subsequently using nitric acid if necessary to arrest the disintegrating process, and then resuming the iodoform suppositories, until healing is complete. The use of the vaginal speculum, in treating chancroid of the ostium vaginæ and parts beyond, is absolutely essential, not alone for the security of reaching the full extent of the lesions, but for occasional examinations beyond the site of existing lesions, and to insure against insidious development of new points. The healthy tissues adjacent to contagious surfaces, should be kept constantly separate by thin layers of carbolated or iodoform dressing; and by occasional soakage in hot water, secure absolute cleanliness, and relief to inflammatory conditions.

In all cases of chancroid, which, when judiciously cared for, are still rebellious to treatment—particularly those where ulcerations and sinuses have occurred, the general condition of the patient should receive especial attention. In cases of scrofulous habit, cod liver oil, iron, etc., are often of service in hastening the healing of a sluggish chancroid. The case cited page 223, where all measures failed, until a change of climate and a sea voyage wrought a prompt cure, is significant.

THE EXULCEROUS FORM OF CHANCROID, described as existing without perceptible loss of tissue, being either on a level or slightly above the surrounding surface, and hence not characterized by the usual marks of chancroidal action—must be classed as of the mildest form, and amenable usually to local astringent sedative applications. The sulphate of iron as a lotion—10 grs. to $\frac{3}{4}$ of water—is often promptly curative.

THE ULCUS ELEVATUM, a lesion of the same type, is scarcely to be classed among chancroids, as it lacks wholly the characteristic features of such lesions. It is usually not larger than a flattened pea, and found on the borders of a prepuce, which is bathed in secretions more or less vitiated. It partakes more of the nature of a papillary hypertrophy, and a local treatment adapted to such overgrowth should be employed, viz.: removing first the source of the irritant secretion, then

apply the powdered persulphate of iron, or if necessary, to touch, lightly, with pure chromic acid.

MODIFICATIONS RESULTING FROM DEVELOPMENT OF
SYPHILITIC ELEMENTS, IMPLANTED ON THE SITE OF
A CHANCROIDAL LESION.

The milder the form of chancroid, the more likely to develop a syphilitic complication, after syphilitic exposure. Active chancroidal action, is doubtless as destructive of the syphilitic contagium, as of healthy tissue, but when, as is sometimes the case, the contagia of both chancre and chancroid are implanted on the same abrasion, at about the same time, the chances are, that the syphilitic disease germ, will find its way into a lymph space, and out of the reach of harm, before contact with the destructive chancroidal cell. This latter, going steadily on in its characteristic destructive action, while the proliferation of the syphilitic disease germs is progressing underneath. So it often happens, that, while the chancroid is in full typical action, the tissues underlying and surrounding, become gradually stiffened and indurated, until a sore presents, equally characteristic of both chancroid and the initial lesion of syphilis. This is known as the "*mixed chancre*."

It will be at once seen that there is not, and never can be, any *mixing* of the contagion of chancroid and syphilis, one representing the *destruction* and the other the *growth* of tissue elements. Necessity for the treatment of the chancroid, is the same as before, but the complication requires the constitutional treatment appropriate for syphilis, at the first moment, when, through development of other characteristic syphilitic lesions, the diagnosis can be definitely settled. The development of induration of syphilis, after the healing of a chancroid (the tissues about which have remained supple throughout its existence) is also not uncommon. The possibility of such an occurrence must be borne prominently in mind, for several weeks after the healing of any lesion resulting from a suspicious sexual contact.

REMEDIES AND REMEDIAL AGENTS REFERRED TO IN THIS VOLUME, AND
THEIR APPLICATION.

FOR LOCAL APPLICATION TO THE INITIAL LESION OF SYPHILIS.

In the non-ulcerative forms; the indurated papule, and the dry scaling patch.

No. 1. White precipitate ointment, vaseline; equal parts; or,

No. 2. The mild mercurial ointment; or,

No. 3. The oleate of mercury, 6 per cent solution, with vaseline; equal parts.

Apply by gently rubbing in a small quantity morning and night.

IN ALL UNCOMPLICATED OPEN INITIAL LESIONS.

No. 4. Calomel pure, dusted on and protected by a thin film of borated cotton; or soaking the cotton with the following solution, and apply; or,

No. 5. Calomel, 20 grs.; lime water, 4 ounces; mix; or,

No. 6. Corrosive sublimate, 10 grs.; lime water, 6 ounces; mix.

FOR THE INFLAMED INITIAL LESION.

Diluted solution of sub-acetate of lead, 4 ounces.

No. 7. Aqueous ext. opium, 10 grs.; or,

No. 8. Iodoform, 30 grs.; glycerine, 1 ounce; oil of roses, 1 drop; mix; apply on lint.

FOR THE PHAGEDENIC OR GANGRENOUS FORM.

No. 9. Iodoform, a sufficient quantity; 1 drop of the oil of roses to 30 grs.; applied freely.

INTERNAL REMEDIES FOR TREATMENT OF SYPHILIS, FROM DATE OF
INITIATION, FOR AT LEAST 12 MONTHS.

No. 10. Blue mass., 60 grs.; exsicated sulphate of iron, 30 grs.; make 30 pills (pil. duplex), one three times a day; or,

No. 11. Protoiodide of mercury, exsicated sulphate of iron, 40 grs.; aqueous extract of opium, 4 grs.; mix, make 40 pills; one three times a day.

EXTERNAL APPLICATIONS FOR INNUNCTION.

No. 12. The mild mercurial ointment; a piece as large as a filbert rubbed in thoroughly, morning and night; or,

No. 13. Oleate of mercury, 10 per cent solution; vaseline an equal quantity; a teaspoonful rubbed in, morning and night, always in a fresh and protected place.

FOR MERCURIAL FUMIGATION, OR THE MERCURIAL BATH.

No. 14. Calomel, (resublimed) 15 to 30 grs.; nightly, or every two or three nights, until its specific effect is obtained. Further directions on page.

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AFTER THE TWELFTH MONTH, THE MIXTURE OF THE BINIODIDE OF MERCURY AND THE IODIDE OF POTASSIUM.

No. 15. Biniodide of mercury, 3 grs.; iodide of potassium, 120 grs.; tincture of orange peel, $1\frac{1}{2}$ ounces; syrup of orange peel, $1\frac{1}{2}$ ounces; distilled water, up to 8 ounces; mix; a teaspoonful three times a day, or if gastric or intestinal irritation ensues—

No. 16. Biniodide of mercury, 3 grs.; iodide of potassium, 120 grs.; fluid extract of thuja, 8 ounces; mix; a teaspoonful three times a day.

In addition to the foregoing,

DURING THE SEQUELÆ OF SYPHILIS.

No. 17. Iodide of potassium, 1 ounce; distilled water, 6 drams; mix. Beginning with 5 drops in a small glass of water, or preferably of milk, increasing by a drop for each dose, gradually increasing the diluent to a tumblerful, until sixty drops are taken, equivalent to 60 grains of the iodide of potassium, three times daily, after meals, unless iodism occurs. In this case begin again with the minimum dose, and increase as before up to 40 drops, and then increase by 1 drop, until 60 grains is again reached. If decided benefit does not take place, the quantity may be even farther increased up to twice that amount, in grave cases, and continued, if well borne, until all signs of the disease have disappeared.

If the iodide of potassium is not tolerated, the following may be administered.

No. 18. Iodine, 24 grains; distilled water, 2 ounces; iodine of potassium, 48 grains; dissolve and add common molasses, or Stuart's syrup, 8 ounces; let it stand 12 hours. Administer from a dessertspoonful, gradually increased to a tablespoonful, thrice daily after meals.

IN THE ALOPECIA OF SYPHILIS.

The following lotions will be found serviceable:

No. 19. Bi-chloride of mercury, 3 grains; hydrochloric acid, 30 minims; distilled water, 8 ounces; then add, spirits of cologne, 1 ounce; rose water, 1 ounce; glycerine, $\frac{1}{2}$ ounce; mix; or

No. 20. Castor oil, $1\frac{1}{2}$ ounces; rectified spirit, $1\frac{1}{2}$ ounces; spirits of cologne, 1 ounce; tincture of cantharides, 2 drams; mix, apply nightly, washing the hair every morning with castile soap.

FOR LOCAL APPLICATIONS IN THE TREATMENT OF CHANCROID IN THE SLOWLY DESTRUCTIVE FORMS.

No. 21. Sulphate of iron, 10 grains; aqueous extract of opium, 10 grains; distilled water to 1 ounce.

No. 22. Carbolic acid, 5 to 10 grains; solution of morphia, (U. S. P., containing 1 grain of morphia), 1 ounce. If the secretion is profuse,

No. 23. Iodoform and tannic acid, equal parts, dusted on; mix; in the more acute forms,

No. 24. Iodoform, 60 grains; vaseline, 60 grains; oil of roses, 1 drop; or,

No. 25. Iodoform, 60 grains; oil of roses, 1 drop; apply in powder; or,

No. 26. Iodoform, 1 dram; carbolic acid, 1 minim; oil of peppermint, 6 minims; mix.

FOR DESTRUCTION OF THE CHANCROID, OR PHAGEDENIC CONDITIONS.

Nitric acid, pure; galvano cautery, or the thermo cautery.

FOR SLUGGISH CONDITIONS.

No. 27. Permanganate of potassa, 2 grains; distilled water, 1 ounce.

No. 28. Carbolic acid, pure; applied daily; or,

No. 29. Carbolic acid, 10 grains; glycerine, 2 drams; distilled water, 6 drams; mix; apply on a thin film of cotton.

FOR APPLICATION TO BUBONIC ULCERS, AND SINUSES.

No. 30. Tincture of iodine, pure; and, for arrest of suppuration in any case.

No. 31. Sulphate of calcium, 1 grain; distilled water, 2 ounces; a tea spoonful every hour, solution to be freshly made every day; or,

Parvules, $\frac{1}{10}$ grs. each.

FOR APPLICATIONS TO THE PHAGEDENIC CHANCROID.

No. 32. Hot water immersion, temperature 100° F.; actual cautery; charcoal poultices

Internally, (Ricords formula).

No. 33. Potassio tartrate of iron, $\frac{1}{2}$ ounce; distilled water, 3 ounces; syrup, 3 ounces; mix; a dessertspoonful to a tablespoonful three every six hours, preferably after meals.

GONORRHŒA AND ITS SEQUELÆ.

LESSON XXXI.

GONORRHŒA.

Nature of gonorrhœa—Its usual seat—May be transferred to the mucous membrane of the eye, and to other points, through mediate contagion—Gonorrhœal ophthalmia a very grave accident—Gonorrhœa a non-specific disease, and may be set up by a variety of causes, although usually the result of venereal contact—Cases in illustration—Gonorrhœa identical with non-specific infantile leucorrhœa—Cases in illustration—Case showing how the origin of gonorrhœa may become important in a medico-legal point of view—Gonorrhœa induced by injections—Case in illustration—Gonorrhœa induced by urethral stricture—Case in illustration—Nature and composition of mucous membrane—Manner in which its secretion is elaborated—Manner in which the normal secretions are changed to a purulent discharge—Beale's view of disease-germs in gonorrhœa—Varieties in the severity of gonorrhœa—Case in illustration.

WE enter now upon a consideration of the third, and last, in the list of venereal diseases alluded to, in the opening lecture of our course, viz.:

Gonorrhœa.—This is a vicious, non-specific, contagious, inflammatory disease of the mucous membranes, and is usually acquired through contact in the venereal act.

It is characterized by free purulent secretion, without ulceration, occurring chiefly in the mucous membrane lining the urethra in the male, and the vagina and urethra in the female; and occurring exceptionally, in the mucous membrane of the rectum.

By transference from these points, the disease may be conveyed to the mucous membrane of the eye.

The occurrence of conjunctival gonorrhœa, is by means of *mediate* contagion; that is to say, by the application of the poison through some intermediate substance, as the fingers, sponges, cloths, etc. This is one of the gravest accidents that can occur in consequence of gonorrhœal affection.

The transfer of the disease, in the same manner, to the nares and to the mouth, is alluded to by authors, but I have never seen such cases, and believe they are so rare that, practically, we need not give them much consideration.

This disease is termed *vicious*, on account of the acuteness of its onset, as compared with idiopathic or traumatic inflammation of mucous membrane, and from the greater disturbance, local and general, which marks its course.

It is termed *non-specific*, because it is capable of being originated by a variety of causes quite independent of a gonorrhœal origin, and even of the venereal act.

This is an important statement, but one which is capable of thorough substantiation by clinical proof, as will be shown hereafter. It is, however, as a matter of course, denied by those claiming a specific venereal virus as the essential, the one sole efficient agent, in the establishment of a true gonorrhœa.

The disease is called *contagious*, and *inflammatory*, because pus, the product of this variety of inflammation, when brought in contact with sound mucous membrane, sets up in it, at once, an inflammatory process of a similar character.

While usually communicated through illegitimate venereal contact, yet a similar inflammation of mucous membrane, producing pus which possesses equally the element of contagion, may arise from causes purely inflammatory. Thus, mechanical irritation, caused possibly by the introduction of a urethral sound, may set up inflammation producing a purulent secretion, which, when brought in contact with healthy mucous mem-

brane, will develop a disease, in no respect different from acute gonorrhœa, the result of venereal contagion.

Allow me to relate a case which bears upon this point. Some four years ago, a gentleman came to me, suffering from irritation at the neck of the bladder, as evidenced by discomfort in that region, and also a certain amount of irritation in the glans penis. He was a man entirely above suspicion of illegitimate venereal indulgence. He was under my direct observation, for at least four or five months, before I came to the conclusion that his difficulty was dependent upon the influence of a contracted meatus urinarius. I had already made a thorough examination with reference to the presence of stone in the bladder and prostatic enlargement, and found neither. I incised the meatus so that the contraction was completely removed, and with it immediately, to my great satisfaction, the frequency of micturition ceased, and all sense of discomfort disappeared. The only after-treatment necessary was in keeping the opening patent. An ordinary sound was introduced some four or five times. The case was doing very well. But the gentleman had a large business to look after, and, finding it exceedingly inconvenient to come to my office, begged the privilege of using the sound himself. I objected, and yet yielded to his wishes, inasmuch as I did not see why he should not be able to perform the operation, if a reasonable amount of care was exercised. I gave him a *new* instrument, a solid glass rod of proper size and shape, and directed him to pass it well through the meatus every morning, and to do it carefully.

At the end of about a week, he came to me with his penis considerably swollen and inflamed. A slight muco-purulent discharge was exuding from the meatus.

In reply to my inquiry, he stated that he found some difficulty in introducing the instrument, that this increased daily, until finally, "determined not to be beaten by it," he had carried it in with some degree of violence. The condition which his penis presented was the result.

Nothing could be more certain, than that this inflammation was the result of mechanical violence. The inflammatory action increased and extended, as in an ordinary gonorrhœa resulting from an impure venereal contact, and finally involved the deeper portions of the urethra. He was even threatened with prostatic abscess, but after confinement in bed, at least four or five weeks, he recovered with slight remaining discharge. This discharge continued for some time; it was exceedingly slight. Thus far the case would have been placed under the head of ordinary simple urethritis, which by many is considered as entirely different from gonorrhœal urethritis, and especially so as lacking the element of contagion.

During the summer, the discharge from the meatus disappeared almost entirely, and, under the impression that there was no danger of communicating his disease, he had a single connection with his wife.

About two weeks after, the wife came to me, suffering with a well-marked, acute *vaginitis* which had extended to the urethra. She was a lady over fifty years of age, and entirely above reproach. To my mind, there was no doubt whatever but that she acquired the disease from her husband, whose disease was of traumatic origin. The result of this intercourse was a disease which could not be distinguished from that which is acquired from a known gonorrhœa. I have, besides, seen several cases which, equally with the one now related, go to prove that a contagious secretion from mucous membrane may be present, as the result of simple causes, wholly independent of contagion.

GONORRHŒA IDENTICAL WITH INFANTILE LEUCORRHŒA.

Another cause of the inflammation of mucous membrane, which does not vary in any practical degree from gonorrhœal inflammation, is infantile leucorrhœa. This is recognized by all authorities as a contagious disease

of the mucous membrane. A similar vaginitis may be communicated from it to other children, when the same sponges or bathing-cloths are used, and an ophthalmia is not rarely set up by means of it, which cannot be distinguished from true *gonorrhœal* ophthalmia.

This form of leucorrhœa is caused, as generally believed, by irritation in a contiguous organ, the rectum. It has also been attributed to the irritation produced by teething. But, whatever the cause may be, an inflammation is set up in the vagina of the infant, which produces a discharge that cannot be distinguished from a gonorrhœal discharge, and which may communicate a similar disease.

Some time since a lady called upon me, accompanied by her little daughter (between nine and ten years old). She stated that the child was suffering from a *bad disorder*, which she believed had been communicated by a young man, intimate in the family, who had been in the habit of playing with the little girl. The visit to me was for the double purpose of obtaining relief for the child and securing some advice as to the way of punishing the young man. On examination, the vulva was seen intensely reddened, and bathed in a profuse, greenish purulent discharge. The hymen was perfect, with no sign of injury. The integument around the anus was irritated, as if by scratching, and great itchiness in vicinity was complained of. The rectum was found loaded with ascarides. The cause of the leucorrhœa was thus satisfactorily explained without implicating the young man. Suppose, however, the youth had been subjected to an examination, and had chanced to have an old gonorrhœa; the probabilities would have been greatly against his being able to establish his innocence before any jury.

Here we see that the question, as to the specific character of gonorrhœa, may become of first importance, from a *medico-legal* point of view.

In support of the practical identity of irritative infantile leucorrhœa and venereal gonorrhœa: Not very long since a case somewhat similar was reported to the Medical and Surgical Society by Dr. Robert Watts. In

a very respectable family of children, one of the little girls was afflicted with a leucorrhœa similar in its origin and characteristics to the case previously described. The physician in charge directed the use of applications by means of a bit of soft sponge. Within a few days a little son only three years old began to show signs of inflammation of the preputial orifice. It was found that the same sponge used on the little girl had been used in washing the little boy. An acute purulent discharge soon appeared, issuing from the prepuce, which, at first, was supposed to be only a balanitis. At about the third week, however, one of the testicles became tender, and swollen, and apparently passed through all the stages of an epididymitis, similar to that following ordinary gonorrhœa.

GONORRHŒA PRODUCED BY INJECTIONS.

During my term of service as Resident Physician on Blackwell's Island, over 30 years ago, several experiments were made, with reference to the question of the causation of gonorrhœa by other means than by contact with gonorrhœal discharge. At the instance of Dr. William Kelly, then Physician-in-Chief, various irritating materials, including pus from various sources; were injected into the urethra of healthy individuals, but without satisfactory results, so far as producing gonorrhœa was concerned. Finally, the experiment was made with pus, taken from the eye of a child, suffering from acute ophthalmia, and a virulent gonorrhœa was established, which continued for four or five weeks, and was attended by the ordinary complications of gonorrhœa, œdema, chordee, etc. Here the disease was produced by causes entirely independent of gonorrhœal contact. As far as could be ascertained, the trouble with the child was free from suspicion of gonorrhœal origin. It is shown by the above mentioned experiments, that pus of an unusually high grade of activity, is necessary to set up a true gonorrhœa.

GONORRHŒA PRODUCED BY THE DISCHARGE ACCOMPANYING STRICTURE.

There is still another cause of gonorrhœa that must be mentioned, in order to make this part of our subject complete.

It is a very important fact, that a discharge, which does not at all differ from true gonorrhœa, may arise through contact with the discharge produced by mechanical irritation incident to *stricture of the urethra*.

A man who has a stricture, but has had no discharge whatever from the urethra for several years, is suddenly placed in circumstances under which an unusual amount of excitement is present in the circulation of that locality; for example, he gets married. A few days after marriage—and I am not now drawing upon general experience or imagination, for I am relating the history of a real case—the man discovers that he has a discharge from the urethra, precisely similar to one of his early gonorrhœas. Naturally enough, he does not associate the presence of the discharge, with the fact that he had disreputable connection, followed by disease, some years previously. The only explanation which seems possible is, that it has been contracted from his bride. He becomes greatly excited, but before openly disgracing the apparent criminal, he goes to his physician to secure a trustworthy witness of her guilt. The physician, however, knowing of certain wild oats sown in earlier life, tells him to pause before he concludes that his wife has been unvirtuous. An examination is made, and unmistakable evidence of *stricture* is found. The conclusion is readily reached that it had been in existence for some time. This becoming appreciated as sufficient cause of the trouble, the man at once gives up all suspicion regarding the impurity of his wife.

Within a few days, however, the *wife* begins to complain, and very soon has a sharp attack of vaginitis, and then comes her turn to enter complaint. The discord, however, is finally harmonized through an understanding that the original difficulty with the husband had

been acquired several years before. The fact which I wish to make clear is this: that by excess of drinking, sexual intercourse, mechanical irritation, etc., a simple purulent discharge may be elevated to the point of contagiousness; that when raised up to that point it is no longer simple, and will communicate gonorrhœa when brought in contact with healthy mucous membrane.

INFLAMMATION OF MUCOUS MEMBRANE.

Before proceeding further with our subject, it will perhaps be interesting to study the subject of inflammation of mucous membranes somewhat in detail.

Mucous membrane is made up of several layers: the uppermost or epithelial, the basement membrane, and the areolar tissue layer. In the mucous membrane of the urethra, the epithelium is chiefly in the form of liminated scales, and the secretion which is associated with it, is the result of the gradual development of this scaly layer. Formative germinal cells come up through the basement membrane, laden with germinal juices, which, as the cell develops into the epithelial scale, exude and lubricate the canal, thus protecting it from the action of the acrid secretions that pass over its surface. This is the natural process by which the fluid, that is necessary for lubrication, is obtained, and the quantity, in health, is never sufficient to constitute a discharge. Any *discharge* from the urethral mucous membrane is pathological, with a single exception, and this is the slight transparent exudation from the mucous glands which comes on through venereal excitement. In the normal development of the epithelial layers, there is just enough material furnished, for the gradual development of the germinal cell into the complete epithelial scale. But set up an irritation, and nature responds to such irritation, by sending up an excessive supply of "pabulum." The upper layers of cells are detached with greater rapidity than in health, an increased quantity of mucoid or lubricating material is thrown out, and we then have the first signal that a pathological process is coming on. This process

continues, and within a short time the undeveloped germinal cells appear upon the surface of the mucous membrane as a discharge. If you examine a urethral secretion when inflammation is present, you will find it to consist largely of cells, which, to all appearances, are the same as the white blood-corpuscles. They are not normal white blood-corpuscles, however, but cells which have been emasculated by too rapid development. They retain the power of proliferation and movement, but they are incapable of elevation into useful tissue, and finally emerge from the urethra as a discharge that is called pus. These cells may appear in such quantities that we see them as a profuse discharge, and, in the highest stage of the inflammation, this discharge has a greenish color, which indicates the additional presence of red blood-corpuscles.

Beale says, that, when this inflammatory process has gone on for a little time, a kind of proliferation of cells takes place upon the surface, in addition to those which come up from the tissues beneath, and that the rapid disintegration of material produced in this manner, gives rise to the infective element of the discharge. Cells thus proliferated, constitute what he terms *disease germs*, and he claims that they may be produced in this way: that they retain life with great tenacity, and may be carried for a long distance, and yet when brought in contact with a healthy mucous membrane, will set up an inflammation, of like character as that from which it originated. Whether this view is correct or not, we have sufficient knowledge to state that pus, under certain circumstances, becomes highly irritant and contagious; that a mild form of inflammatory product, may become changed to that which is contagious. The theory above advanced would certainly explain the contagious character of the gonorrhœa, and also the different varieties of the disease with which we meet.

You will remember, that last week, a man came before us, who had a profuse purulent discharge from the urethra. That discharge was acquired, through venereal contact, about five or six days before his visit here.

On questioning him, it was found that he did not suf-

fer from pain at all, and that except for the discharge, he was not able to say there was anything the matter with him. At the time, I called your attention to the fact, that it was one of the milder varieties of gonorrhœa. There was, perhaps, no question regarding the origin of the disease, and yet I doubt very much whether that discharge would, if placed in contact with healthy mucous membrane, have communicated gonorrhœa. The grade of inflammation was low, and so low, that it is a question whether its products were capable of establishing an inflammation of like character. But let such a man go on a drunken spree, or have excessive sexual intercourse, you would find that his discharge would become painful. If, then, it was brought in contact with healthy mucous membrane, you would see developed a corresponding discharge, and an active contagious property would be present. There are, therefore, two varieties of the affection: 1. That in which there is a slight, painless, purulent secretion. 2. That in which a higher degree of inflammatory action is present, which gives rise to pain and a greenish purulent discharge.

A man may come to you, complaining of an almost white purulent discharge, and at the same time saying that the connection had been with a woman whom he knew to be free from gonorrhœa. Perhaps the additional statement will be made, that she was suffering from the "whites," or that she had just completed her menstrual period. If you do not interfere with the discharge, it will disappear within four or five days, as a rule, and the man will be well. But the trouble is that, as soon as a man sees a drop of pus at the meatus urinarius, he goes to a doctor, who attempts, in very many cases at least, to abort the gonorrhœa. A solution of nitrate of silver is employed as an injection, and if that is kept up for four or five days, a sharp urethritis is usually established. I do not believe there is any such thing as aborting true gonorrhœa. Gonorrhœa runs its course, and lasts about four weeks, and any urethral discharge that exists for a less period, I should be willing to say was not gonorrhœa.

LESSON XXXII.

Specific origin of gonorrhœa still claimed—This claim opposed by both early and recent accepted authorities—Arguments advanced in favor of its non-specific origin—Necessity of the understanding of physiological processes to settle the question—Claims of a specific origin of gonorrhœa through a micrococcus—Arguments to prove this a fallacy—Differential diagnosis—Urethral stricture a cause of discharge which may be mistaken for a gonorrhœa—Abortive treatment of gonorrhœa not warranted by experience—No well-authenticated case of the success of such treatment yet produced—Gonorrhœa acquired from a well-authenticated gonorrhœa not susceptible of speedy cure.

The importance of a clear appreciation of the nature of gonorrhœa, warrants me in again calling your attention to this subject. Is it, as I have positively claimed, a non-specific disease—that is to say, one capable of being originated, in typical form, through a variety of causes, or must it always and invariably be referred to contact with the secretion of a pre-existing gonorrhœa? I need not assure you that I have no doubt, personally, *that this is a fact*. The reasons for believing the disease a non-specific one, and some of the cases proving it, have been laid before you in a previous lesson. But, I gave you simply the results of my own thought and experience. I did not say to you that a contrary view is still held and taught. This is so prominent a fact, that it appears to me desirable, to present to you some of the reasons given, for belief in the specific origin of gonorrhœa, and also to support my own views by citations from eminent contemporary authorities.

In the year 1877, a prominent English surgeon issued a book, confined to the subject of gonorrhœa alone, and containing about 400 pages. Its author is a gentleman who has been identified with the study and treatment of genito-urinary diseases in England for many years, and I can commend this book to you as the most valuable and comprehensive work on this subject in our language. But, in it, Mr. Milton has raised some issues which I

thought were settled; especially that most important one with reference to the *specific character* of gonorrhœa. After considering the question, as it would seem, quite thoroughly, the author arrives at a conclusion which, to me at least, is extraordinary, which is that, so far as he is able to judge, *gonorrhœa is the result of gonorrhœa only*. Now, the French authorities, of which Ricord is the leading representative, almost without exception make the definite and unequivocal statement, that true gonorrhœa may be acquired from a simple leucorrhœa. Ricord gives repeated instances of this kind, and also cites examples in which a gonorrhœa, not distinguishable from that acquired by contagion, has been produced solely by a persistent and continued ungratified venereal excitement.

In this country we have Drs. Bumstead and Taylor (favorably known as authorities in this department) confirming this view on page 40 of their work (ed. 1879), as follows: Dr. B. says, "I have been convinced, by somewhat extended observation, that gonorrhœa originating in this mode, is of very frequent occurrence. Of one thing I am *absolutely certain*, that gonorrhœa in the male may proceed from intercourse with a woman, with whom coitus has for months, or even years, been practised with safety, and this, too, without any change in the condition of her genital organs, perceptible upon the most minute examination with the speculum. I am constantly meeting with cases, in which one or more men have cohabited with impunity with a woman, both before and after the time when she has occasioned gonorrhœa in another person; or, less frequently, in which the same man, after visiting a woman for a long period with safety, is attacked with gonorrhœa, without any disease appearing in her, and after recovery, resuming his intercourse with her, and experiences no further trouble. The frequency of such cases, leaves no doubt in my mind, that *gonorrhœa is often due to accidental causes and not to direct contagion*." And page 41, "Most cases of gonorrhœa from leucorrhœa, or the menstrual fluid, present no characteristic symptoms by which they can be distinguished from those originating in contagion." Drs.

Van Buren and Keyes (who have written an excellent work upon genito-urinary diseases), express themselves with the greatest positiveness on this point, on page 53: * "Experience proves beyond a doubt that a high condition of urethral inflammation, attended by an abundant discharge, and presenting absolutely no features to differentiate it from a gonorrhœa derived from a prostitute with a virulent discharge, may be acquired by a young lover, from his equally healthy mistress, by a young husband from his wife, or may be produced by applying a chemical irritant to the urethra."

Dr. Fordyce Barker, of this city, quoted by Dr. Bumstead (Bumstead and Taylor, page 41), speaks of a peculiar form of metritis, which has associated with it, a leucorrhœal discharge, that, in repeated instances, has produced a purulent urethritis in the male. Not long since, a gentleman came into my office, with the statement that he had been married nearly one year; that shortly after marriage a purulent discharge came from his urethra. On consultation with his physician he was told it was of slight importance, and had probably been acquired from a leucorrhœal trouble from which his wife was then suffering. From that time, within three or four days after each sexual congress with his wife, a purulent discharge appeared in his urethra and continued until assisted by an astringent injection. When examined, the man was found to be free from any trouble whatever. Upon examining the wife it was ascertained that she was suffering from retroversion of the uterus; that the surface of the external os was eroded and covered with a thin layer of muco-purulent material. The uterus was restored to its normal position and retained by a pessary. I was of the opinion at the time that the erosion and discharge were due to displacement of the uterus, and so stated. Under suitable treatment the lady made a prompt recovery, and from that time the gentleman suffered no more from his urethral trouble.

* "Genito-Urinary Diseases with Syphilis." Van Buren and Keyes. Appleton & Co., N., Y. 1874.

To me, the case seemed to be one that pointed clearly to the leucorrhœal discharge, dependent upon the condition of the uterus, as the cause of the urethral discharge in the husband. This, and the case which I related at the last lecture, in which the patient produced a urethritis by the violent introduction of a sound, I would put forward as among those, where there is every reason to believe the urethritis to have been produced, by other causes than contact with a gonorrhœal discharge.

Mr. Milton admits that "urethral discharges do appear in men as the result of connection with women laboring under leucorrhœa, *in whom there is no reason to suspect a present or a previous blenorrhagia.*" This admission, however, is wholly negated by the sentence which follows it, thus: "It must, I think, be equally admitted that the facts supposed to establish this, are, when we come to sift the matter closely, generally vague and few." The property of contagion, with Mr. Milton, points directly to specific cause; to already existing gonorrhœa as the origin of it, in all cases, and where there is absolutely no evidence of such origin, and no reason to suspect it, belief to the contrary, Mr. Milton says, "must remain a mere conviction, and cannot be raised to the stability of truth."

Mr. M. states, that in no case that he has read of, "is there anything to show that the surgeon had satisfied himself as to the *previous state of the organs in both persons.*" On the strength of this, he would seem to claim that all the evidence in favor of the non-specific character of gonorrhœa, the carefully observed and reported cases of accepted authorities, are without value. Notwithstanding the positive belief acquired through the long and studious experience of such men as Ricord, Diday, Bumstead, Van Buren; and, unequivocally stated, we must believe all urethral discharges associated with the contagious element to have a gonorrhœal origin, "even when there is no evidence of such origin, and no reason to suspect it." Personal statements, from no matter whom; circumstantial evidence; character of individuals; repeated coincidences; all go for nothing.

Even the case previously cited, when the disease was

proven to be of traumatic origin, and which was proven to be contagious (and hence gonorrhœal) by the supposed *proven* communication to a presumably healthy wife, even this case may be waived out of the contest as among the not *absolutely* proven cases.

We, however, must admit that all clinical observations, and investigations, are of necessity more or less empirical, until carried to a point coincident with, or to the establishment of some fixed physiological or pathological law. Until such is established, the most important, the most conscientious, and extensive, clinical labors must be open to the denial and depreciation of every passing observer, of little or much experience. Thus it happens, that the most important question, upon the correct or faulty solution of which, the honor and happiness of individuals—even of whole families—may depend, the accumulated experience and the deliberate conclusions of our wisest men, are disregarded, and the specific nature of gonorrhœa asserted, upon the basis of a purely negative personal experience. If anything could give an incentive an impetus to a movement towards a more scientific solution of the matter, we certainly have it here. Naturally, we look to the great authorities in histological and pathological science, for some clue which shall lead to a more definite understanding of the true nature of the contagious element of gonorrhœa, as well as that equally contagious property which is characteristic of conjunctivitis and infantile leucorrhœa.

Dr. Salisbury and others have, for many years, claimed a vegetable spore as the cause of gonorrhœa, but the persistent denial of this claim, by distinguished microscopists, at home and abroad, appears to have settled this question in the negative. But in a recent series of lectures on the relations of micro-organisms to disease, delivered before the Alumni Association of the College of Physicians and Surgeons, N. Y., by Dr. Belfield of Chicago, attention is again called to the alleged parasitic origin of gonorrhœa. In the opening of his third lecture Dr. B., alluding to the possible origin of gonorrhœa, says: "In 1879 Neisser made the assertion, based upon

numerous examinations, that there is present in the purulent discharge of gonorrhœa, whether from urethra, vagina, or conjunctiva, a *micrococcus* not found in other pus, distinguished by its size, shape, and mode of reproduction. Neisser's previous work entitled this assertion to respectful consideration, and it was at once subjected to extensive tests. The reports have been, with one exception, unanimous in corroborating Neisser's assertion in all its details. I may mention especially Ehrlich, a most expert and experienced, yet conservative and trustworthy observer; Gaffky, a pupil and present assistant of Koch; Aufrecht, of Madgeburg; Löffler, Leistikow, Bockhart, Krause; and among the ophthalmologists, Leber, Sattler, and Hirschberg. The only dissenter, so far as I know, is Dr. Sternberg, who asserts that this micrococcus form is widely distributed, and is, in fact, the same as that which Pasteur has shown to cause fermentation of urea.

Several attempts have been made to inoculate human subjects—since animals are not susceptible to the contagion—with the isolated micrococci. Bokai, in Pesth, asserts the induction of urethral gonorrhœa, in three out of six students so inoculated; but as he neglected to keep them in solitary confinement during the trial, the experiment is not so convincing as it might be. Bockhart, having cultivated the organisms on gelatine, inoculated with the fourth culture a paralytic hospital patient, and observed a typical gonorrhœa on the sixth day. Sternberg cultivated micrococci from gonorrhœal pus in flasks, and observed only negative results in each of five patients inoculated therewith. Thus far, therefore, it is not decisively established that the bacterium associated with gonorrhœa is the cause of the disease.

Sattler has recently found micrococci, apparently identical with those of gonorrhœa, in the conjunctival granulations, and affirms that inoculation with the organisms, isolated by cultivation, induced the disease in a human subject.

Micrococci, then, exist in the human body, locally and generally; yet excepting gonorrhœa there is no

decisive evidence that a specific micrococcus is associated, exclusively, with any one specific morbid process in the human subject."

It will be remembered that in 1872, Losterfer, of Vienna, claimed to have discovered a corpuscle or bacillus, which was peculiar to syphilitic disease, and this discovery was announced and proven to the entire satisfaction of Skoda, Hebra, and Stricker, and was disputed by Wedl, Gruber, and Neuman. Professor Stricker, however, at once commenced a series of independent operations for the purpose of ascertaining the validity and real significance of Losterfer's discovery. The alleged corpuscle was found in syphilitic blood, but it was also found in the blood of persons not syphilitic, but who were subjects of cachexia from other causes.

In the more recent discovery of the gonorrhœal bacillus not only has it been asserted present in every specimen of gonorrhœal pus, but typical gonorrhœa is claimed to have been set up, through its inoculation upon persons previously free from the disease. Through the kindness of Dr. Belfield I have been enabled to observe the microscopic appearances of the so-called gonorrhœal bacillus or micrococcus. About the diameter of a white blood-corpuscle, it is made up of fine, apparently round points, loosely arranged in a kidney-like form about the diameter of a white blood-corpuscle, and apparently occurring in about the same frequency, in comparison with the red. Other and more critical experiments will be required before the claim of its specific power can be admitted. In the cultivation of these bacilli for experimental purposes the difficulty of securing absolute freedom from the fluid originally associated with them, and commonly accepted as capable of setting up a gonorrhœa, without the intervention of a bacillus of any sort, must be very considerable.

The subjects of experiment must be secured against even the possibility of sexual contact. In the six cases cited, the chance of acquiring a gonorrhœa in the interest of medical science, *might* be accepted as an opportunity to take the risks of ordinary contagion under cover of

the scientific experiment. The fact that out of six inoculations, under apparently similar circumstances, three only were successful, is worthy of note. Sternberg's claim that a micrococcus, identical in appearance with the so-called gonorrhœal micrococcus, is often found in fluids entirely independent of gonorrhœal influence, would, if proven, at once relegate this discovery to the records of Lister's corpuscle. The statement (oral) of Dr. Belfield that, in his experiments, such a micrococcus, has been repeatedly found in the pus of sores on the hands of students working much in the dissecting-room, is significant. If it does not wholly disprove that the origin of the alleged gonorrhœal micrococcus, it nevertheless shows that it is only one among the causes hitherto claimed as capable of initiating the disease and hence loses much if not all of its practical value as a scientific discovery.

It has occurred to me that the difficulty of settling the question with reference to the specific character of gonorrhœa, may be simplified, if we can go behind all clinical records, and consider the changes which occur in the transition between the normal formation of epithelial elements and the characteristic pathological products. Rindfleisch—and his opinion is entitled to consideration—in discussing the question of the formation of epithelium, uses a significant phrase, namely, "epithelial infection," and says: "The opinion is inevitable that the embryonal formative cell, can only become an epithelial cell, when it comes in contact with such; *we must believe in a kind of epithelial infection.*" That is to say, when a formative embryonal cell comes up from the cellular tissue to take the place of a cell that has preceded it, its form and character is determined by coming in contact with epithelial cells already formed.

With reference to other tissues, it is claimed that the peculiar form which the germinal or formative cell is to take is determined by contact with the tissue of which it is destined to become a portion.

If this view is accepted, we have infection as a physiological process, and then the interesting question

arises, at what point does the epithelial element cease to have the infective influence? In other words, at what point does it cease to have the contagious property? For, it is here distinctly shown, that normal epithelial elements, possess an essential and characteristic property of contagion. If this be the case, shall we accept the contagious element as evidence of gonorrhœa, when we find it in the physiological process? As soon as the fact, that a contagious principle is contained in the physiological constitution of the parts, is recognized the doctrine of contagion receives a fatal blow. One thing is very certain, viz., that as long as the physiological infection, this influence of epithelial cells by their contact with each other, is continued in a salutary way, it gives rise to no disturbance whatever, and the thought of contagion does not arise. But when a cell, which has fallen from its integrity, exerts its vicious influence upon other cells, disturbance is manifest, and compels attention to its character and powers.

Because gonorrhœal disease is contagious, it has been claimed that this property must be regarded as evidence of the presence of a special virus. If, however, it is the contagious property alone that is characteristic, and this property is the proven attribute of all epithelial cells, it can no longer be regarded as evidence of the specific character of gonorrhœa; hence the only distinction to be recognized, between gonorrhœa and urethritis, is a moral one. The term *gonorrhœa* implies gross immorality. A good man, then, with simple urethritis, perhaps occurring independent of sexual contact, may, by injudicious living or venereal excess, elevate his simple urethritis up to a contagious point. Then he has *gonorrhœa*. He has done nothing morally wrong; he has simply been placed without the pale, because of his urethral discharge assuming a contagious form. In that condition, he has, perhaps, communicated the disease to his wife, who would, under Mr. Milton's teachings, be qualified to sue for a divorce, and to obtain it, notwithstanding there was no evidence of gonorrhœal origin, nor any reason to suspect it.

DIFFERENTIAL DIAGNOSIS.

Having endeavored to ascertain what gonorrhœa is, we will briefly allude to the question of differential diagnosis.

Inflammation of the mucous membrane covering the glans penis and reflected upon the prepuce, termed *balanitis*, may be mistaken for gonorrhœa. This condition may arise from various causes, such as irritation produced by accumulation of sebaceous material beneath the prepuce, or from hypertrophy of the papillæ of the mucous membrane covering of the glans, as in the case exhibited this afternoon.

In that case, the irritation produced by the enlarged papillæ, had given rise to pus, which had accumulated beneath a long prepuce, in such quantity, that, when the prepuce was pressed, a discharge from the preputial opening took place, that could very readily have been mistaken for one issuing from the urethra.

I have encountered cases in which such a mistake has been made, and injections containing various astringent and irritating materials used for months under the supposition that the patient was suffering from gonorrhœa, when in truth the urethra was free from all disease except that produced by the injections. In some of these cases, because of the degree of phimosis present, it is difficult to ascertain whether the discharge issues from the urethra or not; but your treatment should not be commenced until that question has been settled.

The next point is to ascertain, whether the disease you are called upon to treat, is a simple urethritis or a gonorrhœa acquired by contagion.

In most cases, the character of the exposure is not well understood, either by the person exposed or by the physician. When a discharge appears in the urethra of the male, after illicit intercourse, the presumption is in favor of a gonorrhœa, existing in the woman with whom such intercourse is held. At the same time, this is not certain, for we know that other causes are capable of originating a discharge, to all appearance identical with
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Quite commonly, (not so much now as formerly, however) an attempt is made to cut the disease short by the use of some active injection. This plan is fast going into disrepute, and justly so, for by adopting it, the advantage is at once lost, of being able to determine whether the disease would not have readily passed away, within a few days by the use of simple means. By such treatment you necessarily add an inflammatory trouble, and if the case is one of real gonorrhœa, you will increase the activity and the inflammatory character of the disease.

I have met with a large number of urethral strictures, several thousands, and I have made it a point to look up their origin, and to learn concerning the disease which gave rise to them, how the previous gonorrhœas were acquired, and how treated. I have not yet found a single case, which recovered within four weeks, where the symptoms were such as to convince me that the patient suffered from a gonorrhœa *that had been acquired from a gonorrhœa*. In every instance in which the evidence was positive upon this point, the gonorrhœa had lasted at least *four weeks*. There are many cases of gonorrhœa in which the patient, on account of his youth or extreme modesty, neglects to seek professional advice, and yet these very ones pass through their trouble in about the same time as those who avail themselves of eminent professional service. The same is also true of many cases reported to me treated by homeopathic remedies, and through the German method, by baths alone. I do not give much credit to the plans which have been brought forward for shortening the duration of the disease, be the treatment what it may. Treatment may aggravate the case, and it may also make the patient much more comfortable than if the disease is left to pursue an unmodified course. The urine can be made less acrid by a variety of means; the distressing symptoms, such as chordee, etc., may be relieved; but as to cutting the disease short, I do not believe that it can be done.

LESSON XXXIII.

ON THE TREATMENT OF GONORRHŒA.

Distinction between gonorrhœa and urethritis—Necessity of ascertaining antecedent facts in regard to the causes of the disease—Usual method of treating cases of supposed gonorrhœa—Probable duration of the disease—True gonorrhœa never lasting less than four weeks—Various causes which give rise to a urethral discharge which may be mistaken for a gonorrhœa—Cases in illustration—Lithiasis a cause—Illustrative case—Urethral discharge simulating a gonorrhœa produced by contraction of the urethral orifice—Cases in illustration.

In the preceding lesson it has been shown that there are no rules, clinical or scientific, by which we can solve the difficult and constantly recurring problem, of the causes which have produced a purulent contagious urethral discharge, in cases of doubt, and this simply from the fact, that the disease is not of specific origin, but may be produced in various ways. It is equally apparent, that the disease varies in its intensity, and in its amenability to treatment, and yet this does not prove that its cause was from a gonorrhœal source, or from a variety of other causes. It is suggested by Van Buren and Keyes (p. 53 of their work,) that only those cases "derived unmistakably from an individual of the other sex with a gonorrhœa," should be called *gonorrhœa*, and that in cases having other origin, and for cases of doubt, the term *urethritis* should be employed. This appears to me an excellent distinction to make, not only to keep in mind the possibilities of a purulent urethral inflammation, free from any moral obliquity, but to lead to intelligent treatment of the presenting disease.

The important preliminary, then, to the treatment of such urethral discharges, is to ascertain all the antecedent facts bearing upon the history and development of the difficulty. It used to be a very common fashion, when a patient called upon a surgeon complaining of trouble supposed to be gonorrhœal, to write a hasty

prescription, calling for a copaiba mixture, a syringe, and an injection, more or less astringent or irritant. Then, after directing the patient to drink plenty of flax-seed tea, and to omit indigestible food, alcoholic and fermented drinks, the case was for the time dismissed. Or else, if the person affected was very urgent to be cured at once, especially if it was a married man, temporarily enjoying the privileges of a city life, to prescribe promptly, or to administer, a strong caustic injection, with the expectation, at least with the hope, of aborting the disease.

All the text-books treating of this matter have been, for the last fifty years, in great harmony in regard to the use of copaiba and injections in great variety for such cases. One of the latest and most valued authorities on other venereal diseases has presented ten copaiba prescriptions and seventeen formulæ for injections, to be used in the discretion of the practitioner during the acute stage of gonorrhœa, and this is a fair sample of the usual teaching on this subject.

In the matter of internal treatment, demulcents, alkalies, diuretics are prescribed as palliative, but the agent upon which all seem to depend for a cure is the balsam copabia in some form.

For local treatment injections of nitrate of silver of a strength of 5 to 20 grains to the ounce of water, are used in the attempt to abort the disease. For the acute stage various salts of zinc, copper, lead, iron, etc., are in use for alterative or astringent effect.

A running fire, commenced at the first tickling sensation in the penis after a suspicious connection, is kept up with injections, more or less irritant, and medicines, not only disgusting to both smell and taste, but which interfere with digestion, and often cause important gastric troubles.

And with all these aids a distinguished recent authority, in summing up the results of treatment by the methods and remedies above alluded to, says:

"The reader may be interested to know, what is the *average* duration of treatment required, in the hands of the best surgeons, for the cure of gonorrhœa, laying

aside those cases seen in the first stage, and which are speedily cured by the abortive method. This may be estimated at *four to six weeks*. *Greater success on the average is not probably attainable by any means with which we are at present acquainted.*"*

Again, on page 52, it is stated, in regard to those cases, said above to be speedily cured by the abortive method: "Taking the usual run of cases met with in practice, not more than one out of twenty is seen at a sufficiently early period to admit of the abortive treatment."

If, then, we can accept an average recovery of four to six weeks as a satisfactory result of the most judicious use of specific remedies and injections in variety, a method of treatment which claims, at least, equally good results, without specifics and without injections, is certainly worthy of your consideration.

Now in order to examine this claim fairly we may profitably refer to the statement made in the commencement of this lesson, viz., "The important preliminary in the treatment of acute urethral discharges is to ascertain all the antecedent facts bearing upon the history and development of the difficulty."

A patient presenting with a history of slight urethral sensitiveness, following from one to ten days after a suspicious venereal contact, and this supplemented within a few hours or days by a slight mucous or mucopurulent discharge, suggests the desirability, when possible, of examining the female with whom connection was had: next, to ascertain the previous condition of the urethra affected; next, the circumstances of greater or less sexual indulgence or excitement, character of diet, kind and amount of beverages used, etc.

Such a condition of urethral irritation may be the result of contact with a leucorrhœa, more or less irritant, or with the menstrual fluid immediately before, during, or after the period. Or it may be the result of inflammatory action set up behind a urethral stricture. Or, in a urethra long irritated by passage of gravely

* Bumstead and Taylor, 1879, page 76.

urine, simply by unusual venereal excitement. If to this the influence of alcoholic or fermented liquors is added, the appearance of such a discharge would not be remarkable. Mr. Reginald Harrison, of Liverpool, reports the case of a medical practitioner who suffered from a puriform discharge, heat and pain along the course of the urethra, attended with frequent micturition, chordee, and sympathetic fever, after eating largely of asparagus. (In this case the urethra was probably not in a previously healthy condition.)

Irritation in the rectum, as by ascarides, may produce it. A syphilitic neoplasm, initial lesion, or secondary papule, just within the urethra and scarcely abraded, may do it.

Finally, it may be the legitimate result of contact with a gonorrhœal secretion in a female suffering with that disease.

The following cases are presented to illustrate the various possible causes of a urethral discharge, independent of contagion:

B. N., physician, 40 years of age, spending a few weeks in the city, in order to avail himself of the college teachings, was about to return home, when he suddenly became aware of a slight twinge at the urethral orifice on urination. Although trying very hard to ignore the matter, he could not help realizing the fact that the trouble was increasing, and, after a sleepless night, on the morning following he examined his penis. He found the orifice quite red, and easily pressed out a drop of pus. He came early to my office, announced his trouble in a manner which indicated great mental distress, confessed to an impure sexual connection three days previous to the first abnormal sensation in his penis, and stated further, that he was a married man, whose wife would certainly come after him if he did not arrive at home within a week from that date. Under these circumstances, he begged that the abortive treatment might be at once and thoroughly resorted to in his case. Examination confirmed the doctor's statement in every particular, and he again plead with great earnestness that a strong nitrate of silver injection

might be used at once, and offered repeatedly to take entire responsibility as to consequences. He had repeatedly treated patients by the abortive method, (fortunately for him, however, without success,) but encouraged by assurances of possible immediate cure, he begged for the chance, especially as it was scarcely twenty-four hours since the first urethral symptom occurred. He was quieted with great difficulty. I explained to him very fully my positive convictions as to the nature of urethral discharges which were apparently cured by the abortive treatment. In his case there was a history of an attack of gonorrhœa nearly 20 years previous, and no sign of trouble afterwards.

He went at once, by my advice, to see the woman with whom he had had connection. She was an inmate of a house of prostitution, and claimed that she had no disease, but refused to be examined. Encouraged, however, by the girl's statement, he consented to go at once to bed, and treat himself exactly as I had advised, which was to avoid all specifics and injections, and to rely upon local antiphlogistic measures, with alkalies and diuretics internally.

The result was that on the fifth day thereafter he came back perfectly free from any evidence of disease. He quite agreed with me that the attack might be due to some simple leucorrhœal or menstrual secretion, or was probably from a stricture due to his early gonorrhœa. As he intended leaving for his home at once, it was decided not to examine his urethra for stricture, and he left rejoicing at his narrow escape from a personal experience in the abortive method.

Again, not long since, a medical gentleman from a neighboring city brought an important patient for an opinion as to a discharge which, coming on after a suspicious contact, had persisted, more or less acutely, for over four months. His history was as follows:

He had never had any previous gonorrhœa. He had been married for ten years; had never during this time noticed any urethral discharge. He had had a single illicit connection, and was in great fear lest he had acquired some venereal disease. Through frequent ex-

aminations and squeezing the penis to detect, as early as possible, any commencing discharge, he finally, on the morning of the fifth day, succeeded in pressing out a small drop of fluid which appeared to be purulent. He at once called on his physician, and begged him at all risks to make some application which would cut short the disease. There was no unusual sensitiveness in the urethra, very slightly increased redness at the orifice, which was said to have been florid habitually. The doctor was quite certain that there was no true gonorrhœa present, but that it was a slight urethritis caused by simple leucorrhœa, or similar irritant, and advised Vichy water. The patient, however, would not be pacified, until he had given him an injection to use. This was composed of acetate of zinc and acetate of lead, each four grains, to four ounces of rose-water, to be used three times a day. Under the influence of this injection, the discharge promptly increased accompanied by some pain on urination, and continued in spite of demulcents, alkalies, and diuretics, for several weeks, without improvement. The injection was changed repeatedly, ringing the changes on the salts of zinc, lead, and copper, in solution and in soluble bougies, and adding sandal oil capsules, and finally the Lafayette mixture,* cubebs, etc. This course was said to have been faithfully pursued for over four months. In this time there were several periods, of a few days each, during which the discharge appeared almost to have ceased, but the improvement was only temporary, the discharge soon returning to former profuse character. This was the condition of things when the doctor called with his patient at my office. On examination, the case appeared like that of a genuine gonorrhœa in the declining stage. Meatus, which was large (30 F.), was quite red, the urethra very

* Lafayette mixture, a standard remedy in general use for gonorrhœal troubles, composed of:

Copaiba	℥ i
Liq. Potassa	℥ ii
Ext. Glycyrh.	℥ ss
Spts. aeth. nit.	℥ i
Syrp. Acac.	℥ vj

tender to the passage of the urethrometer. This, in a penis of three and a half inches circumference, was readily turned up to thirty-four at the bulbo-membranous junction, and while by slight traction it moved forward easily, considerable tenderness was complained of. At thirty-two, it caused only a feeling of slight uneasiness, and came smoothly through and with a little stretching out of the urethra at this size, but followed by quite a little oozing of blood. This pretty certainly eliminated stricture, as a cause for the continuance of the supposed gonorrhœa, and showed an engorged and villous condition of the whole mucous membrane. On careful enquiry as to *exactly* what the patient was doing, and how he was living during the short periods of improvement which had been noted, it appeared, when critically recalled, that each one had corresponded with absence from home, and under circumstances where he was unable to pursue his treatment with that thoroughness which was his habit at home. Having seen quite a number of similar cases where a chronic lithiasis had produced urethral conditions which, aggravated by treatment for supposed gonorrhœa, precisely resembled those in the above case, this was suggested as a probable explanation. The doctor at once confirmed my suggestions by the statement that *for more than three years previous to occurrence of the supposed gonorrhœa he had been treating the patient for lithiasis*, brick-dust deposits in the urine having been present much of the time. An immediate examination of the urine showed it to be highly acid, and freshly voided, under the microscope, showed occasional crystals of uric acid. (A few hours after, the characteristic, red pepper-like grains were deposited). It was suggested that this lithiasis was directly and solely responsible for the origin of the supposed gonorrhœa. It is not at all uncommon in such cases by persistent *stripping* the penis, in the effort to discover a discharge, to bring forward a little mucopurulent discharge, especially in cases where there is urethral contraction even very slight. The contraction at the orifice in this case, only four millimetres, might readily have caused a slight collection of secretion from

the habitually irritated mucous membrane, sufficient to account for what was seen in the first instance, and upon the strength of which, alone, the treatment of gonorrhœa was initiated.

In accordance with my advice, all treatment by injection was stopped, also specific medicines, which had greatly disturbed his digestion. His mind was relieved by the assurance that his trouble was not, and never had been, gonorrhœal. He was put upon a course of blue pill and iron, with dilute nitro-muriatic acid, and advised to keep his skin in order by morning exercise and sponge bath, followed by brisk frictions, preferably with hair gloves. The result was not ascertained for several months, but it finally proved to be in full accord with the view which was taken of the case. The discharge speedily lessened, and without the slightest treatment locally, or otherwise, ceased entirely in the course of three or four weeks. But for the anxiety consequent upon an illicit connection the discharge, which had probably been present in an equal quantity for months, would in my opinion never have been discovered. Several cases almost identical with the foregoing, warrant the inclusion of this view in any case of newly discovered urethral discharge. Again, there is a variety of purulent urethral discharge not very rare, which is apparently independent of any contagion, or sexual excitement, and which is usually confined to the immediate vicinity of the urethral orifice. I have never seen it except in connection with a decided contraction of the canal at this point, congenital or acquired. It is usually quite painless, although I have in a number of instances seen it completely simulating a mild form of gonorrhœa.

Thus, a gentleman brought his son, a lad of sixteen, to enquire as to the nature and importance of a slight purulent discharge, of which complaint had been made for two or three days. The boy had acquainted his father with the fact on its first appearance, and denied all knowledge of its origin; he had accidentally noticed it one morning on rising. There was not the least external evidence of inflammation or irritation. A drop of creamy pus evidently collected behind a quite narrow (20 F.) meatus, was by slight pressure easily made to

exude. I have habitually attributed such discharges to accumulation of irritating crystalline material deposited during the passage of the urine, and aggravated by the necessary friction during the passage of urine. The urine in this case proved to be highly acid, and contained uric acid crystals, and under treatment for this, the discharge passed off, and now, for four years, has not returned.

Two brothers, twins, fifteen years of age, were sent to me, the one complaining of a constant sense of irritation at the urethral orifice, causing him much annoyance and which he had experienced more or less for a year, and there was slight redness and pouting of the lips of the meatus, but not the least trace of any discharge.

His brother had a slight purulent discharge, which he stated was first seen six months previously. He stated also that he had been accused of having acquired it by sexual contact. This he stoutly denied. The brothers were inseparable and his twin confirmed the denial. He had been treated by injections and internal remedies, including copoiba, with alkalies, etc., but without avail. The amount of discharge was perhaps equal to three or four drops a day, and ten at night. Both were annoyed by too frequent desire to urinate, once in three or four hours, but not at night. The urine in both was apparently normal in quality and quantity. The urethral orifice in both boys was 32 F., while the normal calibre in each was 32 F., the penis in each case being $3\frac{1}{4}$ inches in circumference. I divided the orifice at the same time in both cases to 32 F. No other treatment was resorted to. The first mentioned was relieved of his irritation, immediately on the division of the contraction, and it did not return. The second was quite well of his discharge in about two weeks, or about one week after complete healing had taken place.

The foregoing cases, cited for the purpose of illustrating the occurrence of irritation and purulent urethral discharge, independently of any contagion, and also of the quality of the urine, have not been of rare occurrence in my experience, my attention having been quite frequently called to such cases during the previous fifteen years.

LESSON XXXIV.

Acquirement of urethral discharge simulating gonorrhœa through mediate contagion—Cases in illustration—Urethral stricture the most common of all the causes of purulent urethral discharge—So-called latent gonorrhœa—Claims for such a source of contagious urethral discharge not well founded—The real explanation referred to irritation caused by irritation from urethral stricture—Explanation of the mode in which purulent secretions due to stricture occur—Statistics in regard to the cure of gonorrhœa by the abortive methods untrustworthy—A very large proportion of discharges not of true gonorrhœal origin, the tendency of which is to get well without specific treatment—Views and practice of authorities—No reliable evidence of success by the abortive methods—Average duration of true gonorrhœa not less than four weeks.

Another source of urethral inflammation and purulent discharge is through *mediate contagion*. From the fact that this origin of a purulent discharge, if not denied, is usually ignored, I wish to state explicitly my conviction that gonorrhœa is occasionally contracted in this way. The fact that such acknowledgment may be made use of to account for gonorrhœa, legitimately acquired, is no reason why the dangers and possibilities of contagion, through the medium of public privies and urinals, should be denied or undervalued. Theoretically, a drop of gonorrhœal pus from male or female, might easily be deposited on the seat of a privy in the locality where the urethral orifice of the next comer would, without especial care was used to prevent, come in contact with such pus; and this, as certainly and as effectively, for purposes of contagion, as if the contact had been through sexual connection with the person in whom the pus had originated.

Practically, men almost everywhere are habitually careful that such contact is prevented, and hence such cases are infrequent; but to prove that the danger is real the following cases are presented:

M. P., a graduate of the College of Physicians and Surgeons, N. Y., of ten years' standing, was settled in a large town in New Jersey. Some three years since I received a letter from him stating his remembrance

of my teaching in regard to the possibilities of acquiring gonorrhœa through mediate contagion, and also of his incredulity then on that point; still farther, that he had recently been convinced that true gonorrhœa could be acquired in that manner, through a painful personal experience. He then stated that he had, when a student, a typical gonorrhœa, and was perfectly familiar with all its characteristic features. That there was no reason for bringing his case to my attention, except in support of a scientific fact which had been disputed. He then stated, that about three weeks previously, he had occasion to spend the day in a neighboring city. Having the necessity to use, in some haste, the privy of the hotel where he stopped, he neglected the usual precautions. On the fourth day thereafter, he became aware of an uneasy sensation at his urethral orifice, and, on examination, found it quite florid and moist; slight pain on urination followed, and by the next morning a distinct purulent discharge was found to be present. This, under internal treatment by alkalies, demulcents and diuretics, without injections, had progressed, increasing in activity, for about a week, characterized by painful urination, chordee, and free greenish purulent discharge. The disease then began to diminish in intensity, and at the time of writing was in the third week, with discharge still profuse, but comparatively free from pain, except from some remaining chordee, which continued to give him some annoyance at night. He further stated, that he had had neither connection or any sexual contact or excitement, for more than a month prior to the appearance of the gonorrhœa. He expressed a willingness to come to New York and give me the opportunity of personal examination of his case if, in the interest of science, it was thought desirable. In response to my affirmative reply, he came a day or two after, and his condition, one of sub-acute purulent urethritis, was readily appreciated, and a thorough analysis of all the alleged facts in the case, resulted in my complete acceptance of it as one of gonorrhœa, acquired through mediate contagion. During the summer following the foregoing occurrence a medical man sojourned temporarily at a sea-

side hotel where the privy accommodations were inadequate, and difficulty was experienced in preventing unpleasant contact with the seat. This was so positive an annoyance that, through representation to the proprietor of the discomfort and danger of infection, from such conditions, the difficulty was promptly remedied. Within a day or two after, the complainant began to experience discomfort at the urethral orifice, and a slight white purulent discharge appeared, quite independent of any venereal contact or of any known cause, except the privy aforesaid. This mild urethritis was treated only by injections of a two-grain solution of alum by means of a recurrent syringe. It did not increase or diminish for a week. The chief annoyance was from painful erections at night without chordee. The discharge then gradually declined, and at the end of the second week was no longer visible. The congested and swollen appearance of the orifice was noticeable for still another week, and it was some days after this, or over three weeks after the commencement of the trouble, before the erections ceased to cause annoyance. This case, at the time of its occurrence (summer of 1880), was confidentially communicated, as of scientific importance, to Dr. L. B. Bangs, by the sufferer, whose position as a clinical teacher in the department of genito-urinary diseases might be supposed to give especial value to his opinion, viz., that the disease in his case was *not* of gonorrhœal origin, and unequivocally acquired through mediate contagion.

But the most common of all the causes which initiate a purulent urethral discharge, which may be mistaken for a gonorrhœa acquired by contagion, is urethral stricture, and this, too, often but slightly infringing upon the normal calibre of the canal. However difficult we may find it to explain the exact manner in which the result is brought about, the *capacity* of a urethral stricture to set up a contagious purulent discharge in a urethra otherwise normal, and this, too, independently of any contact with contagious material of any sort, is in this day beyond the chance of any serious question. It is true that in accounting for this we *may* accept the

view implied in explanation of the so-called "*latent gonorrhœa*" of Noeggerath. This claims that, once a man has acquired a gonorrhœa from contagion, he never gets quite rid of the contagious property which has been engrafted on his urethral mucous membrane. On the contrary, after a period of years, during which there is no tangible evidence of the disease, the discharge, practically identical with the original gonorrhœa, mysteriously returns with all its original capacity for infecting healthy mucous membranes. This theory has been advanced to account for the fact that many women, who *before* marriage were perfectly free from uterine and ovarian disease, *after* marriage become affected with such disease, and in a way which warrants the conclusion that it had its origin in a contagious element derived from a husband previously affected with gonorrhœa, and this notwithstanding an apparent freedom from any sign of the disease for years. The fact that disease is often so communicated is undeniable, but the explanation of it is much simpler and more in accordance with known pathological conditions and processes, and without admitting a mysterious latency for gonorrhœa. The non-specific origin of gonorrhœa as claimed and explained in a previous lesson, makes it not only possible, but probable, that the mechanical irritation caused by a urethral stricture may produce a purulent discharge; and this whether the stricture, under circumstances of similar aggravation, is of simple—that is to say, of gonorrhœal, diathetic—or of traumatic origin. And that this discharge, whatever its origin, simply from the fact that it is purulent, may, through known influences, such as low condition, acrid natural secretions, excess in living, sexual indulgence, etc., acquire a contagious property. It will then be seen that a stricture may develop at any period after an acute attack of gonorrhœa, even after a long period after the absolute cure of the original inflammation, and that as the simple mechanical influence of a stricture may produce a purulent discharge, any purulent discharge may be elevated by certain favoring conditions into a highly contagious character.

The explanation of a contagious discharge, occurring years after a gonorrhœal inflammation has passed away, is in complete accord with known and accepted pathological conditions and processes. It will also be seen by the foregoing statements of fact, that purulent discharges of more or less contagious character coming on after sexual intercourse are not of necessity gonorrhœal, but may, and—from the fact that a large proportion of the cases where a suspicious discharge appears have, at some previous, time suffered with gonorrhœa—are quite likely to find the cause of such discharge a stricture of the urethra more or less salient.

From the fact that always behind a stricture there is a congested condition of the mucous membrane, ready, on slight additional provocation to produce a catarrhal discharge, and from the fact that sexual excitement is, above all other influences, most likely to furnish that provocation, it will be easily seen that the appearance of a purulent secretion, after sexual contact, is not of necessity the result of a new contagion, and that the treatment of such discharge, by means addressed to the abortion of a gonorrhœa, would probably aggravate the existing trouble, that the cessation of such discharge after such treatment, *would not prove that a gonorrhœa had been aborted*. Therefore, it may be claimed that the wisest course, in all cases of doubt, will be to withhold all measures tending to obscure the diagnosis, especially such as the use of caustic injections, which have never yet been absolutely well proven to have cured a single case of gonorrhœa.

The statement has already been quoted from accepted authority that, "laying aside those cases which are speedily cured by the abortive method," the remaining cases of gonorrhœa run an average period of not less than four to six weeks, and that not more than one case in twenty is seen sufficiently early to warrant hope of success by the abortive method. It may be confidently stated, that it is impossible to distinguish such a case from one where the inflammation is induced by any one of the various causes previously mentioned, until the disease, if of gonorrhœal origin, is too far advanced to

warrant any hope of cure by the abortive method. Thus it is, that the statements and statistics presented from time to time, in regard to cure of gonorrhœa by the abortive method, are of necessity untrustworthy. I have used this method many times in past years, and some cases presenting symptoms which might have been due to gonorrhœal infection, were apparently cured in a few days. But I have *uniformly* failed in cases (and they were many), where I knew the source of the discharge to be a gonorrhœa, which had communicated to others a gonorrhœa. In consequence of these repeated failures, I abandoned the abortive method, fully fifteen years ago. Since that time, instead of attempting to abort a gonorrhœa, in every case in which a purulent discharge had appeared, with more or less smarting, from twenty-four hours to a week after a suspicious connection, I have waited further information as to the nature of the disease in each particular case. I have waited not only because of lack of faith in any abortive measures, but because I have believed and still believe that a very large proportion of urethral discharges are of simple origin, and will get well in a few days under the most ordinary hygienic measures, and because I do not, and for many years have not, believed in the real efficacy of the treatment by specific medicines during the active stage of any urethritis, no matter what its origin. And further, because I have long been satisfied that the treatment by so-called specific internal remedies is always more or less pernicious in its effect on the digestive functions, often producing dyspepsia of a particularly distressing and rebellious type. I have seen several cases of congestion of the kidneys brought on by the use of the balsam of copaiba in doses ordinarily prescribed. Mr. Milton (p. 69 of his work on gonorrhœa) says of this drug: "In certain constitutions it brings on pain in the region of the kidneys, hæmaturia, severe headache, giddiness. The vomiting, too, it must be remembered, which copaiba brings on, is horrible, and few but the most resolute who have suffered in this way, can be induced to make a second trial," . . . and "*these disagreeable results occur when copaiba is given in*

doses which very good surgeons have not hesitated to recommend."

Formerly the abortive treatment of gonorrhœa by injections was approved and recommended by most authorities, and directions for its employment are still to be found in the latest text-books. It is instructive, however, to observe that the plan is now usually presented with the distinct statement that its efficacy is more than doubtful, and that its employment is not without danger of aggravating the trouble.

Thus, to quote from the latest English authorities, "the treatment of urethritis may be abortive or systematic; *the abortive treatment* includes methods of which the object is to cut short the disease before acute inflammation has supervened—that is, when the symptoms are confined to a tickling at the meatus and a slight clear viscid discharge. The various plans comprise the injection of strong caustic fluids into the urethra and the administration of specifics such as co-paiba or cubebs in large and frequent doses. The success which follows the employment of either of these methods *is so small, while the dangers that attend them are great, that we have abandoned them.*" (Hill and Cooper, London, 1881, p. 507.)

Van Buren and Keyes (N. Y., 1874, p. 61), say that, "The idea of aborting gonorrhœa by the internal use of balsams has been abandoned. . . . The only allowable abortive treatment, as far as the nitrate of silver is concerned, is its use at the strength of half a grain to the ounce, the injection being carefully repeated every two or three hours until a trace of blood is seen in the discharges. Then all treatment must cease. . . . As to the effect of attempts to cure by nitrate of silver treatment, it may be said that it very rarely succeeds if undertaken more than twenty-four hours after the commencement of the discharge . . . (p. 62), when it does no good it invariably does harm. . . . *In true gonorrhœa* there is no certainty of success in employing the abortive treatment. "From the above remarks it is evident that the abortive treatment is to be condemned, or at least only undertaken at the urgent request of the

patient, he being willing to assume all risks, and this course the judicious surgeon rarely accepts." Bumstead and Taylor (1879, p. 48), say "During the first few days after exposure, from one to five, in different cases, before the symptoms have become acute, *when the discharge is but slight and chiefly mucous*, and while yet there is no severe scalding in passing water, we may resort to caustic injections, with the view of exciting artificial inflammation, which will tend to subside in a few days, and supplanting the existing morbid action, which is liable to continue for an indefinite period, and is exposed to various complications. This is known as the 'abortive treatment' of gonorrhœa. . . . It is certainly liable to be abused, and if so, is both unsuccessful and capable of producing the most unpleasant consequences; but when limited to the early stage of gonorrhœa, and used with proper caution, it is a highly valuable method of treatment, unattended with danger and undeserving the censure sometimes cast upon it." Again, p. 52, in closing the subject, they say, "I cannot leave the subject of the abortive treatment of gonorrhœa without again expressly stating that I recommend it only in the first stage of the disease, and not after the acute inflammatory symptoms have set in, *or while the patient suffers from scalding in passing water.*"

Thus it will be seen that Hill and Cooper include in the number of cases suitable for attempt at abortive treatment only those where the symptoms are *confined to a tickling at the meatus* and a *slight clear viscid discharge*.

Van Buren and Keyes say that any attempt rarely succeeds after 24 hours from the commencement of the discharge, and Bumstead and Taylor say that this plan should only be tried when the discharge is but slight, and chiefly mucous, and while there is no severe scalding on passing water.

It will at once be seen that the symptoms above named are just and only those which characterize a simple urethritis, and that an assumption of its gonorrhœal nature, based upon its alleged cure a few days subsequent to its administration of a caustic injection,

followed by cessation of treatment, is simply to ignore the possibility of any other than a gonorrhœal origin for even the simplest forms of urethritis.

I quite agree with Drs. Bumstead and Taylor in their statement, previously quoted, that the average duration of gonorrhœa is not less than four weeks, and I would go still further, and state it as my positive conviction and belief, based on a long and careful experience, that *any urethral discharge which gets well within four weeks, under any sort of treatment, never was a true gonorrhœa.* The current medical journals are teeming with medicines and injections, claimed to cure gonorrhœa in a week. Numbers of cases, giving an average cure in a few days, are reported. I do not question the honesty of purpose or statement in such cases; the error lies in accepting all recent urethral discharges as gonorrhœa, without due investigation and without taking into consideration the fact that by far the greatest number of purulent urethral discharges are the result of other causes than the *contagium* of gonorrhœa. Notable among these is urethral stricture, from lithiasis, or from an antecedent gonorrhœa, occurring perhaps 10 or 20 years previously, and thus often a cause wholly unsuspected by the patient or physician. Of this character are the gonorrhœas, which many patients aver that they get, every time they have a suspicious connection. These are the cases which make the reputation of numerous medicinal preparations, soluble bougies, and more numerous injections, which are warranted to cure gonorrhœa in a few days, and not unfrequently do so, if we are willing to accept as a gonorrhœa a purulent discharge following connection, in a case where a stricture of the urethra is present.

LESSON XXXV.

Gonorrhœa claimed to be due to a specific *contagium*—the so-called gonorrhœal *bacillus*—Tenacity of life in such organisms forbid the possibility of their destruction by any measures which are suitable for use—Ordinary antiphlogistic remedies alone promise benefit—The author's method of treating gonorrhœa in the early stage—Systematic treatment of gonorrhœa as recommended by authorities.

Gonorrhœa is claimed, by some, to be due to a specific *contagium*; by others to be a simple urethritis, capable of being set up by various causes, and of being aggravated by conditions, and applications, which have a tendency to induce irritation, inflammation, and disease, in healthy structures. If those who accept the latter view are correct, the attempt to abate an inflammation through means which practically increase it, is apparently idiotic.

If, on the other hand, a distinct *contagium*, a "gonorrhœal bacillus," is claimed, it will be interesting for those who still occasionally practice the abortive method, to consider the fact that such bacillæ flourish and propagate in caustic solutions of a strength which promptly destroys human tissues, and that persistent immersion in boiling water (220° Fahrenheit) for twenty-four hours, has been proven not to interfere in the smallest degree with their vital activity or their contagious properties.

The plan of treatment I invariably pursue, in cases of alleged commencing gonorrhœa, is, in the first place, to explain as concisely and emphatically as I am able the impossibility, under any conceivable circumstances, of averting the disease, whatever it may prove to be. Next, to explain the different ways by which such a discharge may have been caused, and, at the same time, gain such information in regard to the probable cause, as the patient might be able to afford. Then, if the source of the discharge is not found unmistakably of stricture origin, to insist upon absolute rest upon the back—best in bed, soaking the penis frequently in water

as hot as can well be borne, especially placing the penis in water of a temperature not less than 100° during every act of urination. Besides this, to clear the bowels with a calomel purge, and administer 10 grains of the bi-carbonate of potassa, and 10 grains of the acetate of potassa, either in a large cup of flaxseed tea, or a glass of Vichy water, every four or six hours. If I cannot, through energetic statement of the possible consequences of neglecting the above plan, succeed in having it followed, *de rigueur*, I come as near it as I can, and with the result in at least 50 per cent of all the cases presenting, of demonstrating, first, that the disease is not a true gonorrhœa; and second, of relieving, in a few days, all the inflammatory conditions in the cases, thus shown not to be true gonorrhœa, and putting them in the line of permanent cure, addressed to causes and conditions which may be shown responsible for the initiation and continuance of the trouble; and third, in those cases which are proved to be gonorrhœa, the foregoing measures will have reduced inflammatory symptoms where any other course must of necessity aggravate them, and thus place the patient in the best possible position to secure the least discomfort, and the shortest duration of the remaining periods of the disease.

LESSON XXXVI.

SYSTEMATIC TREATMENT OF GONORRHŒA.

Usual method of treating gonorrhœa in America—Drs. Bumstead and Taylor's plan—Plan of Drs. Van Buren and Keyes—The latter dwell on the importance of hygienic management—Alkalies alone in the increasing stage, then copaiba and cubebs—Use of injections highly commended in stage of decline—Illustrative formulæ—Drs. Bumstead and Taylor begin with general measures—Brisk cathartics—Early and frequent local applications of hot water according to Mr. Milton's plan—Copaiba and cubebs given early in the disease—Injections in variety—In the stage of decline—In the third stage, injections—Copaiba and cubebs, etc.—Illustrative formulæ—Addendum—Dr. Curtis's method of treatment of gonorrhœa by hot-water retrojections—Dr. F. R. Sturgis's views—Author's suggestions.

Having eliminated all elements of doubt in a case of recent, more or less acute, urethral discharge, and after ascertaining that, in spite of your precautionary and soothing measures, the urethral inflammation steadily progresses; that the pain and swelling increase, and the discharge becomes more profuse, assuming a yellow or greenish hue, it must be practically accepted—no matter what its origin—as a typical case of gonorrhœa, and treated as such. Before presenting my own views and practice in the management of acute gonorrhœa, I will briefly summarize the prevailing views and modes of treatment.

According to American authorities we may accept Bumstead and Taylor, 1879, as the latest, and Van Buren and Keyes as the one immediately preceding, published in 1874. Each is generally accepted as representing the most advanced and judicious mode of management at the date of publication. Thus, Van Buren and Keyes, under the head of the methodic treatment of urethral inflammation, say: "The hygienic part of the treatment is of the utmost importance . . . absolute continence . . . avoidance of anything liable to induce sexual excitement . . . no alcoholic stimulants of any

sort, particularly no sweet fermented wine (champagne), and above all no malt liquor. Abstinence from salt and highly-seasoned food, coffee, asparagus. etc., (quoting Fournier). "All violent exercise must be avoided. Utmost cleanliness in all respects is obligatory."

Of the increasing stage "the first and perhaps only medicine the patient need take internally is an alkali." The following prescription is given as an example:

℞ Potass. Citratis	ss-i
Spirits limonis.....	ss
Syrup simplicis.....	ij
Aquæ.....	i

A dessertspoonful largely diluted with water, three or four times daily, fasting.

Vichy water, etc.

"More or less of this or of some other alkaline preparation should be continued throughout the treatment. If micturition is quite painful, grs. i. to iii. of the extract of hyoscyamus may be added to each dose of the alkali.

"Then, with first stage of gonorrhœa, capsules of balsam of copaiba, or oil of yellow sandalwood, ten drops in each." Then follows the Lafayette mixture and two corresponding formulæ, and on page 69 (ibid.), they say the "*balsam of copaiba* is the best preparation and is applicable to all stages of the disease. . . . Oil of yellow sandal-wood is a most excellent remedy: in some cases certainly doing better than copaiba. . . . Oleo-resin of copaiba is usually well borne by the stomach. . . . These three remedies may be alternated, commencing with sandal-wood, and ending with cubebs. The last one in use when the discharge has ceased, should be continued for at least ten days, one capsule less being taken daily, until the remedy is gradually dropped."

Of local measures they say (page 65, ibid.):

"Injections are of doubtful advantage in the increasing stage of gonorrhœa. In bastard gonorrhœa and mild urethritis they are of great importance from the first. If a diagnosis of either of the latter conditions *can be*

made, one of the following injections may be made at once," thus :

℞ Liq. Plumbi Subacetatis, dil..... ℥ i
 Ext. Opii Aquos. grs. vi
 M., et cola.

Also at p. 69, *ibid.*: "Injections are of great service in the stage of decline; any of the formulæ on page 65 may be used, commencing with the milder and ending with the stronger solutions," thus (p. 65):

- (1) ℞ Zinci Sulphatis. grs. i-iii
 Liq. Plumbi Subacetatis dil. ℥ i
 Shake before using.
 M.
- (2) ℞ Zinci Sulph. grs. i-iii
 Aquæ. ℥ i
 M.
- (3) ℞ Acid. Tannic grs. v-x
 Aquæ. ℥ i
 M.
- (4) ℞ Aluminis Exsic. grs. vi-x
 Aquæ. ℥ i
 M.

Drs. Bumstead and Taylor begin the treatment of gonorrhœa in the acute stage with a brisk cathartic,* "five grains of calomel combined with ten grains jalap; a full dose of Epsom salts or three or four compound cathartic pills of the U. S. P." "Water as hot as can be borne is the most grateful application that can be used. I have found that it generally affords relief to the scalding in micturition, and the local pain and uneasiness, and can fully endorse Mr. Milton's views in regard to it." . . . After the operation of the cathartic we may, in most cases, commence at once with copaiba or cubebs." When, however, there is much swelling and severe pain on urinating, it is advised that the anti-

* Bumstead and Taylor, fourth edition, 1879. Henry C. Lea, Philadelphia.

blenorrhagics be deferred for a few days, using alkalies and sedatives instead, thus.

R. Potass Bicarbonatis	℥ i
Tr. Hyoscyami.....	℥ i
Mucilaginis.....	℥ ii
M.	

A teaspoonful every four hours.

While the case is severe, the above constitutes the sole treatment. When the local symptoms are not severe, so that the syringe can be used without pain, an opiated and demulcent injection is recommend, thus:

R. Extracti opii.....	℥ i
Glycerinæ.....	℥ i
Aq.....	℥ iii
M.	

"Injection to be used after every passage of urine." Subsequently, "half a drachm of Goulard's extract, as the inflammatory symptoms begin to subside,"

Of "the treatment of the stage of decline" they say (p. 57); "The chief remedies adapted to the third stage of gonorrhœa are injections and copaiba and cubebs. By far the most important of these are injections, which constitute our chief reliance in the treatment of this affection when it has arrived at this stage. . . . Under certain circumstances their effect is found to be injurious. If, *in the course of treatment*, the patient complains of a *frequent desire to pass his urine*, and other symptoms *indicating irritation or inflammation of the neck of the bladder or prostate*,* injections should at once be suspended." A large number of formulæ are given for copaiba and cubeb mixtures, the following of which may serve as a type (the Lafayette mixture, p. 66):

R. Copaibæ.....	℥ i
Liquoris Potassæ.....	℥ ii
Ex. Glycerrhizæ.....	℥ ss
Spiritus Ætheris Nitrici.....	℥ i
Olei Gautheriæ.....	gtts. xvi
M.	

Dose: a tablespoonful after each meal.

* Italics are my own.—F. N. O.

Ibid., p. 67 :

Pulveris Cubebac.....	iii
Copaib.....	iss
Aluminis.....	ii
Sacchari albi.....	i
Magnesiae.....	iss
Olei cubebæ.....	
Olei Gautheriæ.....	aa 3 i

This mixture is known as the black paste, and the patient is directed to take a piece the size of a walnut after each meal.

Capsules containing cubebæ and copaiba also recommended (p. 71): "During the administration of copaiba, cubebæ, or any other drugs which act by their presence in the urine, the patient should drink but little fluid so that the urine may be undiluted, and as fully charged as possible with the remedy."

Addendum.

A new method for the treatment of gonorrhœa and gleet has been very recently brought to my notice through an article entitled "The Hot Water Retrojection in the Treatment of Gonorrhœa," by Dr. Holbrook Curtis, of New York, published in the *New York Medical Record* of April 21, 1883. This plan is so much in line of my own view of the essential requirements in such cases, that it has seemed to me desirable to present it, not only because it claims better results than any plan with which I have had practical acquaintance, but because it supports the non-specific view of the disease, and is in harmony with rational medicine, hence opposed to specifics in the treatment of the disease. Thus he says:

"Endoscopic examination reveals that a current of hot water passed continuously through the urethra primarily congests and secondarily renders anæmic the mucous membrane, in the same way that a hot bath affects the fingers. It is observed also that the urethra, after being acted on for some time, will endure water of a temperature that cannot be tolerated by the hand. Taking advantage of this fact, I have arranged an apparatus by means of which one is enabled to pass seve-

ral quarts of hot water through the urethral canal from the prostatic portion outward, increasing all the time the temperature of the water until the thermometer oftentimes indicates 180° to 190° F. I have repeatedly passed ten quarts of water from behind forward in this manner, continuing the retrojection for some time after the point of toleration has been reached. This varies much in different persons. It remains then to pass a mild astringent solution through the same catheter that has been employed for the retrojection. Preferably I use a suspension of iodoform in a glycero-tannin solution in the following proportion :

R. Acidi Tannici,
Iodoformi.....ss ℥ii
Glycerinæ.....℥i
Aquæ.....℥iii
Sig.: Heat, shake, and inject.

After the injection the catheter is withdrawn and the patient is directed to return in twelve or twenty-four hours, as the case may warrant. . . .

"In twelve cases of undoubted acute gonorrhœa the discharge has been entirely checked in three days. In two cases I have succeeded in aborting the disease by one prolonged (ten quarts) thermo-retrojection. In six cases the disease lasted six to ten days, while a case of chronic gleet that had made the round of the profession for nine months succumbed in seven days to dilatation and retrojection.

"It has been noticed that cases that have been treated for some time with strong mineral injections do not respond nearly as quickly to the hot-water method. I have yet to see, however, a 'fresh case' of gonorrhœa, in which no previous injection has been employed, that will not recover within a fortnight if the retrojection is properly administered.

"From a careful study of more than forty cases, I claim for hot retrojection :

"*First.* The course of the disease is shortened, by at least two thirds, making the average limit of the case—viz., stoppage of the discharge—nearer one week than three.

"*Second.* The discharge immediately changes from a purulent to that of the nature of gleet, and is reduced to a very small quantity.

"*Third.* There is absence of chordee and pain in passing urine.

"*Fourth.* Stricture as a sequel is improbable.

"*Fifth.* The usual inconveniences of the disease are done away with.

"A brief description of the apparatus employed is as follows: An ordinary wooden armchair is half-mooned in the front of the seat to admit a tall cuspidor. A pulley is rigged on the ceiling by means of which a tin pail with a lamp beneath is elevated. A rubber tube, provided with a stopcock and connection, leads from the pail, and at any time may be fitted to an ordinary No. 8 English flexible catheter. The necessity of having a catheter with a bulbous end to prevent water passing into the bladder is purely imaginary. I would also state that an ordinary Davidson's syringe may be used, the patient giving himself the retrojection from the pail on a chair beside him; this is not as convenient, however, as the gravity apparatus. When the water is of the proper temperature, say 120° F., the catheter is vased and introduced to within an inch of the prostate, connected with the rubber tubing, and the pail elevated to such a height that the flow is brisk. The lamp under the pail will keep the temperature of the water slowly increasing. The patient holds the catheter in position, and may read the morning paper until the water becomes uncomfortably hot. The lamp is then extinguished, and the retrojection proceeds at the point of toleration. After this has gone on for a sufficient time, a syringeful of the *injection* formulated above is thrown in, and the catheter is withdrawn. If the patient is unable to come back at once, give him the same prescription for urethral injection, or slightly modified to suit the particular case, with directions to use it twice a day until he can return. As an adjunct to this the only internal treatment I employ is bicarbonate of soda in five-grain compressed tablets, to take ten daily. Heretofore my cases have been confined to private practice,

but recently, at the kind invitation of Professor Sturgis, I had an opportunity to demonstrate this method at the Charity Hospital, where I am told the results have been so gratifying that Dr. Sturgis has promised to compile the statistics in regard to this mode of procedure, which seems so rational that it will undoubtedly supersede the ordinary injection treatment.

"Several writers have advocated warm water 'irrigation' of the urethra in gonorrhœa, and have claimed more or less success for their methods, but no one, to my knowledge, has shown any statistics that can compare with those obtained by prolonged progressothermal retrojection. More than a brief outline of the subject would be too lengthy for an article of this kind, but there is such a field for experiment afforded in this direction, I take this opportunity of placing some fragmentary data before the profession."

I have taken the pains to ascertain from Prof. F. R. Sturgis, one of my colleagues in Charity Hospital, the results of his experience in the method of treatment of gonorrhœa above cited. He informed me that the hot-water retrojections, as proposed by Dr. Curtis, were readily applied and well borne in several cases at Charity Hospital, as well as in his private practice, and that in no case had any unpleasant effects been recognized. On the contrary, the inflammation had been promptly lessened by every injection, and that the discharge had proportionately decreased. While he was very favorably impressed with his experience with the hot-water retrojection plan, he had not yet had sufficient experience to speak otherwise than tentatively of the matter.

Without any practical experience in this very flattering mode of treatment as thus far presented, it occurs to me that it is open to at least two objections. First, that the depth to which the injection is advised is unnecessary, as the occurrence of gonorrhœa, as far back as the prostate, in my opinion is not met with practically once in five hundred cases. Hence, irritation of the deep urethra, and possible extension to the seminal apparatus, readily resulting in epididymitis, is not warrantable. I have cited several cases where acute pros-

tatic inflammation has apparently resulted from a similar mode of administering copious injections of moderate temperature. Again, the danger of throwing the injection into the bladder is *not* a fictitious one. I have seen several cases where the bladder has been easily filled and refilled over and over again with the short pipe of an ordinary Davidson's syringe. Again, I would object to the *brisk* flow of the fluid as introducing an unnecessary element of force, which on general principles should be eliminated, as far as practicable, from all operations and procedures involving the genito-urinary apparatus. A gentle, steady current would, it appears to me, produce equally good results without the danger of forcible distension of the deep urethra. These points, while they seem to me important to recognize, are yet susceptible of easy correction without detracting from the efficiency of the method which in the main appears to me most promising, and which, with water of a temperature of 120° F., I shall not hesitate to give an early and thorough trial.

LESSON XXXVII.

Usual method of treating gonorrhœa in Great Britain, by Messrs. Hill and Cooper—Cold rather than hot applications are recommended—Specifics not given in the first stages—Injections rarely to be used until the acute inflammation has subsided—Formulæ given much the same as previously quoted from American authorities—Treatment in vogue at King's College Hospital, London—St. Mary's Hospital—University College Hospital—Middlesex Hospital—Expectant treatment.

OF the English authorities, we have, latest, Hill and Cooper.* In the first place, in commencing the treatment of gonorrhœa, they agree precisely with Van Buren and Keyes, as to the importance of hygienic treatment and the mode of carrying it out. Alkaline and demulcent drinks, with a saline aperient every morning. Warm baths half hour at a time at 95° F. (p. 509 *ibid*). Advise that penis be wrapped in strips of rag dipped in warm water and covered with oiled silk or ice-water, whichever gives most relief. Otis's coil with cold water current. If pain very severe 15 or 20 leeches to perineum.

No injections have been found by them serviceable during inflammatory stage, except two, viz., half-hourly injections of tepid water into urethra which sometimes give relief, but often none. If congestion be moderate, hourly injections of alum or sulphate of zinc, quarter grain to the ounce. Painful micturition best relieved by alkaline drinks, warm baths, rest and local depletion. Injection of ice-water into urethra before micturating, or immersion of penis during the act, often effectual in easing pain.

Of specifics they say (p. 513): "The good effect of

* "Syphilis and the Local Contagion Disorders." London. Second edition, 1881, p. 508.

copaiba depends almost entirely on its being given when the mucous membrane is ready for it. If given too early, it fails to do good, and sometimes does harm. The urethra is in the most favorable condition for copaiba when the pain on passing water is nearly gone, when the painful erections are nearly at an end, when the discharge has become less in quantity, etc. . . . Much pain in passing water is always a sign that specifics will do harm." Cubebs, oil of yellow sandal-wood, Gurgun balsam, balsam Peru, and Chian turpentine believed occasionally to have been useful; also, oil of ergeron. Kava kava, suggested; not yet tried.

In regard to injections they say :

"Recourse should be rarely had to them (p. 517), until the acute inflammation has nearly subsided; and they are most effective when given to complete a cure that has already made progress by other means." Formulæ for several, practically the same as recommended by authorities already quoted:

Mr. J. L. Milton, of London, who has written a work of over three hundred pages on the subject of gonorrhœa and its complications, in the fourth edition, in 1876, gives a summary of the views of practice in gonorrhœal disease in Great Britain, and while his own views are generally in accord with those quoted from authorities in this country and in England, previously cited, he very evidently has not their faith in the necessities or in the efficacy of injections or specifics in the treatment of the disease. He presents the plan of management in the different hospitals of London.* Thus—

In Guy's Hospital.—Mr. Bryant gives scruple or half-drachm doses of tartrate of potassa, adding, when weakness is present, potassio-tartrate of iron and tincture of the muriate of iron. He has given up injections, but in some cases introduces a concentrated solution of tannin into the urethra by means of a bougie.

London Hospital.—M. Maunder gives a mixture of

* Condensed from reports published in the London Lancet in 1867.

copaiba, liquor potassæ, spirit of nitric æther and camphor julep. In the acute inflammatory stage a scruple of nitrate of potass, with or without an eighth of a grain of tartar emetic and morphia, every four hours, night and day. An occasional purge is ordered. For gleet he prescribes twenty drops of tincture of muriate of iron thrice daily. In private practice he prefers injections of sulphate of zinc and treatment on general principles.

St. Bartholomew's Hospital.—Injections of sulphate of zinc two grains to an ounce. When there is much inflammation this is first of all allayed by means of warm fomentations, warm baths, opium, or a suppository of morphia. Free action of the bowels is maintained. Diluents are prescribed. This treatment is described as almost invariably successful. Should it fail, the local application of bougies and the counter-irritant effects of blisters applied to, or nitrate of silver rubbed over, the front of the upper part of the thigh, Scarpa's triangle, are found the most efficient remedies. Orchitis is treated with opium, rest, and linseed poultices.

King's College Hospital.—Mr. Wood, in the acute stage, gives a saline aperient, or a drachm of compound jalap powder, or a drachm of jalap and calomel if the patient be bilious, at intervals of three or four days, or a week, during the treatment. Afterwards he gives liquor potassæ or bicarbonate of potassa in camphor mixture or infusion of pareira, with plenty of diluents. He prescribes early and frequent injections of lead lotion and glycerine. For orchitis he punctures the tunica albuginea. To allay chordee he uses compound henbane pills, or in severe cases morphia or chlorodyne, aided by the local application of iced water.

In the chronic stage, while the discharge is profuse, Mr. Wood gives copaiba and sulphuric acid, with frequent injections of sulphate of zinc, alum, or nitrate of silver; in obstinate cases powdered cubebs in drachm doses. In sluggish cases, with gleet discharge, tonics, mineral acids, and especially tincture of sesquichloride of iron in twenty-minim doses, three times a day. If

the discharge become gleety or thin, injections of a weak solution of chloride of zinc, or perchloride of iron and glycerine. Sometimes he employs the same substances in the form of a soluble bougie or uses matico.

St. Mary's Hospital.—The treatment of the late Mr. Gascoyen is described as consisting of weak astringent injections in the very early stage, but not when the symptoms had become severe, preference being then given to copaiba in doses of forty to sixty drops daily. For ardor urinæ, irritability of the neck of the bladder and chordee, if severe, suppositories of soap and opium. After the violence of the symptoms had passed off weak injections might again be employed, along with drachm doses of cubebs when the discharge was very obstinate; after this quinine, tincture of iron, and other tonics. He considered salines and depleting means in the early stages not only useless but injurious, and he scarcely ever knew abortive treatment succeed, while he often saw gonorrhœa exasperated by it.

Charing Cross Hospital.—Mr. Barwell avoids copaiba. In a first attack he purges, orders hot bathing, diuretic or aperient alkalies as may be indicated, followed by an injection of sulphate of zinc, two grains to an ounce. For second or subsequent attacks, free use of aperients and injections; chronic cases may be treated with tannic acid injections, three or four grains to an ounce. For slight but continuous discharge, either Chian turpentine or Canada balsam, with black or cayenne pepper. He often finds tincture of steel and tincture of capsicum useful. Cubebs is not better than the other peppers. The most certain and efficacious treatment is to pass down every other day, for an inch or an inch and a half, a bougie smeared with an ointment containing three, five, or even ten grains of nitrate of silver to an ounce of lard.

University College Hospital.—Mr. Christopher Heath, in the early stage, injects from the very beginning a strong lead lotion, an ounce of the liquor plumbi to seven of water. In the ordinary acute form he prescribes injections of warm water and weak lead lotion,

followed by sulphate of zinc injections when the acute symptoms have subsided. Rarely gives copaiba. For chordee, extract of belladonna and glycerine applied to the under surface of the penis, with a pill of opium or henbane at night. He finds acute orchitis yield readily to antimony and sulphate of magnesia. When there is much œdema, he punctures the tunica vaginalis. Later on, strapping and mercurial ointment remove any enlargement of the testis. In gleet he examines the urethra with the bougie and endoscope, and if, as frequently happens, he discover a distinctly diseased surface, a strong solution of nitrate of silver is applied topically; if the disease appear to be more general, an astringent injection is given, a large metal bougie passed and steel prescribed.

Middlesex Hospital.—In the early stage Mr. Hulke prescribes an injection of acetate of lead frequently repeated, and purges freely, generally giving compound jalap powder. In the more chronic condition he orders frequent injections of one grain of nitrate of silver to eight ounces of water. For old gleets copaiba or cubebs, more frequently, however, tincture of sesquichloride of iron. In acute orchitis, Mr. Hulke prescribes nauseating doses of tartar emetic with Epsom salts, and sums up as follows: "In the pages the reader has just passed through, eight different systems of treatment are found to prevail in as many different hospitals, all adopted and put in force by able and experienced surgeons. What is more, my inquiries lead to the conclusion that, had the number of hospitals reported upon been multiplied tenfold, the result would have been to display ten times as many different methods." He also quotes the views and plans of Mr. Chalmers Miles, who advocates extensive blistering of the thighs as the sole remedy in gonorrhœa, claiming cure by this method in five to six days, citing an experience in sixty cases (p. 60, *ibid.*). On page 62 he refers to treatment without specifics, or injections, or blisters, thus:

"*The Expectant Treatment.*—This system has at one time or other had advocates of such capacity that it cannot be passed over. Not long ago it found an able

champion in Dr. Chambers, of St. Mary's Hospital. This gentleman, as I understand him, says that gonorrhœa is naturally a most mild disease both in the male and the female, *and if left to itself will get well in a short time, occasionally in four or five days*, while the simplest treatment will remove it *in a fortnight* if it be not made severe by the folly of the patient or his medical attendant. "I consider," he says, "all primary heroic treatment of urethral discharges *a most unjustifiable interference with nature.*" Of this plan Mr. Milton says, "It is not very easy to imagine how any one could argue in favor of a more hopeless cause. There is no evidence brought forward in support of a statement which runs quite counter to the experience of the greatest men who have studied the disease. What they, after mature deliberation, say, utterly negatives the idea of gonorrhœa being so easily managed by the simple process of letting it alone."

LESSON XXXVIII.

Mr. Milton's statistics of the results of the treatment of gonorrhœa by balsam copaiba—Cases treated by rest and abstinence—Treatment by purgatives—Popular appreciation of the value of copaiba—Mr. Milton's views of the treatment of gonorrhœa by injections—He does not accept statements of their great efficiency—List of articles recommended as curative—Over fifty articles selected to represent the varieties of injections in common use—Accuracy as to their comparative value, in Mr. Milton's opinion, not possible—Mr. Milton's experience in the use of injections—Their power as curative agents very limited—His statistics show an average continuance of gonorrhœa, under any treatment, of over four weeks—His opinion of the use of copaiba—He claims that it should be banished from the therapeutics of gonorrhœa.

Mr. Milton gives his own statistics of results of treatment by balsam copaiba, which are so interesting in view of the claims for the great curative properties of copaiba in the treatment of gonorrhœa, generally accepted, that I shall quote them entire, from page 70 *et seq.*:

CASES TREATED WITH COPAIBA.

	Initials.	Nature of Case.	Treatment.	Result.
1	J. D.	Mild gonorrhœa of three months' duration.	Copaiba. Injections of sulphate of zinc and nitrate of silver.	Not quite cured at end of 27 days.
2	W. J.	Gonorrhœa of three or four days' standing.	Potassio-tartrate of antimony, copaiba, turpentine, and steel.	At the end of 86 days left off attending. Not quite cured.
3	—	Gonorrhœa of three days' standing.	Pulv. salin. At the end of fourteen days copaiba, and then turpentine. Afterwards colchicum.	Cured in 65 days.
4	J. S.	Ordinary gonorrhœa.	Had been treated for seven months with sulphate of magnesia, copaiba, etc.	At the end of this time he was still suffering from gleet, cloudy urine, and pain over the bladder.

CASES TREATED WITH COPAIBA.—*Continued.*

	Initials.	Nature of Case.	Treatment.	Result.
5	L. H.	Gonorrhœa of a month's standing.	Injections and purgatives for fourteen days. Pulv. salin. and inject. of sulph. of zinc. Copaiba, turpentine, and pulv. salin. Injections.	Cured in 52 days.
6	W.	Gonorrhœa of a week's duration.	Magnes. sulph., followed by copaiba and nitrate of potass. Injections of sulph. of zinc.	Not quite cured at the end of three months. Subsequently he reports that the disease died out without anything further being done for it.
7	J. W.	Gonorrhœa of some days' standing.	Aperients and copaiba perseveringly used for seven months.	Rapid improvement. Severe relapse, apparently from bathing. At the end of 7 months scarcely well.
8	Mr. N.	Gonorrhœa, second attack, very severe.	Copaiba, liquor potassæ, compound calomel pill at night.	Cure twice deferred by his giving up treatment just as he appeared to be getting quite well.
9	Mr. R.	Gonorrhœa of four days' standing, complicated with a sore on the penis.	Copaiba and liquor potassæ with five grains of blue pill every night for a short time. Injections of nitrate of silver and sulph. of zinc.	Discharge removed in 3 months.
10	Mr. W.	Gonorrhœa of a fortnight's standing; first case.	Copaiba, cubebs, zinc injections. Almost constant rest.	Little improvement at the end of 12 weeks.
11	Mr. E.	Gonorrhœa of four days' standing; second attack.	Brisk purgatives, copaiba, liquor potassæ, pil. hydrarg. chlor. comp. Injections of arg. nit. and zinc. sulph.	Cured in about 7 weeks.
12	Mr. B.	Gonorrhœa of some weeks' standing.	Copaiba, liquor potassæ, compound calomel pill.	At the end of 2 months still some gleet remaining.

CASES TREATED WITH COPAIBA.—*Continued.*

	Initials.	Nature of Case.	Treatment.	Result.
13	A. T.	Ordinary gonorrhœa.	Took six drachms of copaiba, and the same amount of spirit of nitric ether, every week for one year.	Still some purulent discharge remaining at the end of that time.
14	Mr. H.	Ordinary gonorrhœa. Patient very delicate.	Took two pints of copaiba in two months, under the care of an experienced surgeon.	No better at the end of the time.
15	C. S.	Simple gonorrhœa.	Took half a pint of copaiba a month for four months.	Discharge diminished to a very small amount; returned directly on the copaiba being left off.
16	Mr. F.	Rather severe. Patient himself a surgeon.	Copaiba in small doses, and then an ounce daily for above two months.	Little if any improvement at the end of this time.

He also quotes (page 66), the results of treatment of gonorrhœa by rest and abstinence alone, 15 cases, with cure, varying from three to twenty-three days, and an average of eight and one half days.

Eight cases treated with cubebs alone, with an average cure of five and one half days; ten cases treated with capsicum, with an average cure of thirteen and one half days; three cases treated with camphor, with an average of nine days.

Treatment by Purgatives (page 24, *et seq.*, *ibid.*): One in sixteen days, one in twenty-eight days, one in forty-seven days, one on the thirty-fifth day a stricture discovered—cure in two months by bougies.

Eight cases treated by aperients alone: four cured at periods varying from three to forty-five days, one in three days, one in sixteen days, one in thirty-seven days, with slight gleet remaining cure in eight days by tincture.

An interesting fact, showing the popular appreciation of the value of copaiba, is presented on page 70, where

he says: "My own experience has satisfied me that the practice of giving it is very extensively diffused, and Mr. Weeden Cooke confirms this. On inquiry at the London Custom House, he found that during the first ten months of the year 1859 no less than 118,396 pounds of copaiba were admitted, or at the rate of 151,075 pounds annually—a quantity sufficient to supply five hundred thousand people every year with a strong dose three times a day for nearly four weeks!

In regard to treatment of gonorrhœa by injections, Mr. Milton evidently distrusts much that has been claimed for many varieties; on page 107 *et seq.* he says: "A list of the substances recommended for injections within the last few years would perhaps show, more strongly than anything I could say, the discrepancy of opinion that prevails as to which is the best. I therefore give a selection: chloride, tannate, and acetate of zinc, carbolate of zinc, sulphocarbolate of zinc, sulphate of zinc, curing as a rule on the third or fourth day, or even sooner; nitrate of silver; acetate of lead; sulphate and chloride of copper; the four sulphates (a combination of alum, zinc, iron, and copper); iodide and potassio-tartrate of iron, iodide of iron in combination with iron filings, tincture of sesquichloride of iron, solution of perchloride of iron, solution of persulphate of iron; oxychloride of tin combined with phosphate and tannate of tin; trisnitrate of bismuth; per-nitrate of mercury, perchloride of mercury; chloride of soda; chlorate of potass, carbolate of potass, carbolic acid and potass, permanganate of potass, which was said to cure recent attacks of the disease in from one to two days, and only failed twice in 64 cases, being just one day less than was requisite to effect a cure with the chlorate of potass; Condry's fluid; alum, tannate of alumina, succeeding, according to one author, where all the usual injections had failed, and described by another as not more efficacious than other kinds of injections; chloride of lime, bisulphite of lime; tincture of iodine, recommended as having never failed during a ten years' trial; nitric acid combined with strychnia; tannin, glycerine of tannin, singly and combined with olive

oil and mucilage; glycerine, combined with carbolic acid and tannin; glycerine and starch; matico, subsequently stated by Signor Carlo Ambrosoli to be the last medicament of the kind we should have recourse to; starch; tincture of catechu, solution of catechu in syrup of tolu; tincture of rhatany, extract of rhatany; vinum opii, tincture of opium, watery extract of opium, opium and glycerine; decoction of poppies; acetate of morphia; belladonna; chloroform; hydrate of chloral; tincture of aloes; hydrastin; leptandrin; red wine; copaiba, volatile oil of copaiba, repeatedly tried in vain at the recommendation of previous observers; honey; green tea; wine; ice-cold water, lukewarm water, not known to have failed "where the system was adopted at the commencement of the disease and followed throughout," warm water, recommended by Dr. John O'Rielly as curing in from seven to nine days; earth and water, often curing in two or three days, and retention of the urine by means of a kind of forceps (*pince*). Though the last can scarcely be considered as an injection it is intended to act in the same way."

"I do not know," says Mr. Milton, "what the reader thinks of this, but to me it is unsatisfactory in the highest degree. In the first place, it would demand a series of careful experiments, prolonged for at least fifty years, to examine with anything like accuracy the comparative value of the different substances here recommended. I say this quite deliberately, for it took me more than two years, at a time when I was not overburdened with private practice, to satisfy myself even imperfectly as to the relative power of three drugs only, namely, the sulphate of zinc, acetate of zinc, and the nitrate of silver."

Of his own experience, he says, page 119 *ibid.*: "I have for years employed injections so soon as ever I could obtain the patient's consent to let me use them, and have never in a single instance had to regret doing so." And he says of injections of nitrate of silver: "Of all the substances ever employed for injections this is, to my thinking, the best. I have seen a great number of injections tried, and have one time or other tried a

good many myself, but I have never observed any exercise such a marked control over gonorrhœa as a solution of nitrate of silver, properly given, and of the proper strength. Yet it is used by comparatively few practitioners, and it is no uncommon thing to hear surgeons say that they have given it up, in consequence of failing so often with it, or from its bringing on stricture. The latter objection is, I think, already got over. The former merits decided attention," but on the following page (p. 120) he says that, "its power as a curative agent, when employed without the aid of other means, is in the general run of cases very limited."

Mr. Milton's opinion of the value of injections as a curative agent in the treatment of gonorrhœa, would seem, then, to depend chiefly upon the use of other means used at the same time. It is evident, from his statement to this effect in the preceding paragraph, that he does not consider them a necessity.

The statistics which Mr. Milton presents on page 70 would seem to show that a copaiba diet, in the average case, could not be estimated at less than about four weeks. On page 68 he gives his opinion that, "perhaps, without exception, the most potent and generally used of all the internal remedies for gonorrhœa, is copaiba, *one of the most nauseous drugs ever found out*," and, further, he says, "it is quite time that men banished it from the therapeutics of this complaint;" and again, at page 70 *ibid.*, he remarks that, as "no amount of experience will enable the surgeon to diagnose *at the outset* those cases in which copaiba will be useful from those in which it will almost certainly fail, it necessarily follows that every surgeon who treats all cases with copaiba—and *there are plenty who do so*—must give it in many instances where it is sure to be of no service." In regard to the dose and mode of giving copaiba, Mr. Milton says, page 73: "Some surgeons give four and twenty times as strong a dose as others." As to the best time, he quotes Dr. Bumstead,* as saying that, "Copaiba can be administered with safety and *to much greater ad-*

* Bumstead and Taylor, 4th Ed., page 65.

vantage in the acute stage of gonorrhœa, or at an early period in the stage of decline, than afterwards, and the same is true of cubebs." Mr. Milton says: "My own experience quite confirms this. . . . As to waiting until the inflammation is subdued, it is, to the best of my judgment, simply useless," whereas, Hill and Cooper, page 513, say, "The good effect of copaiba depends almost entirely on its being given when the mucous membrane is ready for it. If given too early it fails to do good, and sometimes does harm." Milton quotes a reviewer in one of the recent medical journals as saying, that, "no sensible or experienced surgeon would think of giving copaiba in the acute stage of gonorrhœa."

LESSON XXXVIII.

Previous quotations from authorities given to show essential differences of treatment—All claiming equally good results—In all cases where short period of cure is claimed the disease probably not gonorrhœa—Evidence in proof of this statement—Specifics not essential to the cure of gonorrhœa—Simple measures shown to be most efficient—Author's experience in treatment of gonorrhœa without specifics—Rarity of accidents by this plan—Promptness of recovery—When not successful some mechanical difficulty usually present—Contractions of meatus urinarius a common cause of prolonging gonorrhœa—Author's plan of managing a case of gonorrhœa—Cure by all plans of treatment explained—Cases which continue rebellious due to causes independent of the gonorrhœal irritant—Specifics and injections valueless to complete a cure when stricture is present—Mechanical causes must be appreciated if the diseased conditions are to be permanently cured.

I have been thus full, and circumstantial, in laying before you the views of recent accepted authorities, in order that each statement in regard to differences between them, could be readily substantiated. To show that many medical men have been taught, that specific remedies were essential to the cure of gonorrhœa, and that as many others, did *not* consider them essential. That one party believes, that they are only useful in the early stages of the disease, while another party considers them comparatively useless in the early stage, and highly beneficial in the latter stage, and that both parties prescribe copaiba largely.

It has thus also been seen, that injections are essential to the cure of gonorrhœa in the opinion of one party, while another considers them, at least useless in curing the disease, and the source of much unnecessary trouble and danger. It has thus also been seen that, while many claim great and uniform success in treatment by injections of one kind, others find no value in it, while another kind in other cases has been promptly curative. It has also been seen that, where a short period has been claimed in the cure of the disease by any method, it has been always doubtful if it was a true gonorrhœa. It is

also easily seen, that authorities are quite agreed, that some cases are rebellious to any, and every mode of treatment, and that the average time for cure, by any means at present generally known, is nowhere claimed to be less than four weeks.

It will be interesting, and perhaps instructive, to recall the fact, that 60 cases are cited where a cure of gonorrhœa was effected by extensive blistering of the thighs, and that the average duration of each case was from five to seven days, and that in Mr. Milton's sixteen cases, treated by injections and purgatives and copaiba, three were cured after an average duration of sixty-three days, while the remaining thirteen cases were left with a gleety discharge.

It is also a significant fact that all the authorities quoted, lay great stress on the necessity of rest and local antiphlogistic measures, and attention to diet and condition of the urine. These are the only practical points, on which all are in perfect accord: on all other points they differ diametrically. It is also a significant fact that, notwithstanding such wide differences on matters of great practical moment, there is a curious coincidence in the duration of the disease by all the different methods. It is also a fact equally curious that if we offset the differences between authorities, and treat cases of gonorrhœa by the means upon which all are agreed, viz., rest, sexual, hygienic, local and antiphlogistic measures, attention to diet and condition of urine, the average duration of the disease, is quite as good as when specifics and injections are used. This statement I make, after an experience with such method of at least ten years. By this plan, in the matter of rest alone, the results of *absolute* rest may be inferred from alleged effect of the six-inch blisters to the thighs of patients of Mr. Chalmers Miles (page), where the average duration of the disease was claimed to be not over seven days. It is certain, however, that but few of these cases were true gonorrhœa. In the matter of sexual hygiene, diet, condition of urine, etc., it is simply common sense to accept these as aids to cure. In the matter of local antiphlogistics, Mr. Milton's statement in regard to the effect of hot

water in cases of gonorrhœa, is quoted by Bumstead with hearty endorsement, thus: * “The only direct application which I can safely say has never disappointed me, which is at once safe, simple and useful, is that of very hot water to the penis; but to obtain the really good effect it offers the water must be hot, not lukewarm. In fact, we seldom see so much good ensue, as when it is carried to the extent of producing some excoriation and faintness; thus applied, *and especially in the early stages of the disease, the weight felt about the testicles soon disappears. The pain on making water and using injections is soothed and the prepuce and glans rapidly regain a more normal temperature and color.*”

With such a remedy even copaiba in large doses might be used with impunity. As Milton remarks, among its other benefits, “*even pain on making water and (even) using injections is soothed.*” It was the trial of Mr. Milton’s hot water cure, as above cited, that led me in the first instance to distrust the value of specifics and injections. Fully ten years ago, cases occurred in my practice where neither injections nor copaiba mixtures were tolerated, and to my great surprise I very soon found that such cases got well as promptly as those where copaiba and injections were used, and that where the discharge lasted more than a month or six weeks, some mechanical obstacle to recovery, such as a contracted urethral orifice or a stricture more or less salient, was found in the deeper portion of the canal. For the first three or four years, I treated vigorously in this manner, only those cases in which the copaiba, cubebs, etc., were not well borne, but I came to appreciate the fact that gonorrhœas of recent date, and especially first gonorrhœas, were more promptly cured, than by the old method, and that there were no cases complicated by epididymitis among them, and that all the annoyances, errors and troubles, arising from the use of injections were effectively avoided.

My plan, based originally upon that of Mr. Milton’s previously quoted, was as follows: 1st. To explain to

*Bumstead and Taylor, 4th Ed., 1879. Page 54.

the patient the inefficiency of the popular remedies and the damage likely to be done to the digestive functions, etc., by taking them, and explaining the nauseous character of the medicines, popularly supposed to be essential to the cure of the disease. This latter argument was often useless, from the fact, that a very large proportion of cases, are inclined to look upon their trouble, as a judgment upon them for their folly, and often seem to take pleasure in self-inflicted penance through their medicines, frequently saying: "Make the dose as nasty as you choose—the nastier the better; I deserve it all," and more to that effect. In point of fact, I believe that on no other ground can the long suffering of gonorrhœal patients, their philosophical endurance of the painful and disgusting injections, and the pints of copaiba which they are induced to swallow, be explained. The mystery of an annual consumption of the 151,000 pounds of that most nauseous, misnamed anti-blenorrhagic, copaiba, by the British public, can in no other way find solution, and I believe I am not far wrong, when I venture to state that an equal estimate for the United States, is taken, not for any real value experienced, but because of its popular reputation, based upon negative evidence, and upheld by the druggists and the unsupported traditions of the medical profession.

2nd. To secure complete personal cleanliness. Especial care to prevent any possible transference of the gonorrhœal secretion to any other mucous membrane, especially of the eye, the rectum, the nares; and to insist upon rest, as complete as practicable on the back, if possible, until the inflammatory stage begins to decline,

3d. Frequent soakings of the penis in water as hot as can be borne. Urination always to be performed with the penis immersed in the hot water, and for general cleanliness, to take other occasional warm and tepid baths.

4th. To put the patient on a milk diet, as the highest type of suitable nutriment, and to use all practicable means by which the urine may be freed from its irritating properties. Alkalies and diluents, in the form of Vichy water (Celestins'), and bicarbonate of potash ten grains

dissolved in a tumbler of water, or flaxseed tea, or infusion of dog-grass (*Triticum repens* rad.), adding twenty grains of bromide of potassa if great pain or irritation is present, and drinking freely to the extent of a tumblerful every four or five hours, and other demulcents, or diluents that may be found more convenient or agreeable in any given case. Flavoring any suitable drink freely with the tincture of gaultheria if agreeable.

5th. To secure perfect freedom from all sexual contact, or from any association, or conversation, or reading material which may have a tendency to excite venereal thoughts or desires.

To continue this plan of treatment, as fully as may be practicable, entirely free from any so-called gonorrhœal specifics or injections, until the complete cessation of the discharge, or until the sixth week from the commencement of the disease. Should any discharge or any urethral irritation be present, after this time, it would, in my opinion, be proper to assume that some mechanical obstacle to the complete cure of the disease, was present at some point in the urethra. In such case an examination of the urethra, with the view of ascertaining its exact locality and degree, should be made. Congenital contraction of the urethral orifice stands first among the probable causes of such continuance. The case is now no longer one of gonorrhœa, and must be considered as one of gleet, dependent solely on mechanical causes for its continuance. These causes, and the proper treatment necessary for their removal, will be considered under the head of GLEET.

It will be interesting at this point to recall some apparently anomalous features in the history and treatment of gonorrhœa, which figure prominently in the statistical records of gonorrhœa as previously presented. Under every form of treatment—expectant, abortive, by specifics, by injections, by blistering, by carthartics, by aperients, by diluents and diuretics and alkalies, some cases get well in a few days, while others are apparently rebellious to any and all treatment, singly or in combination. The explanation to me is simple. All cases which, under any treatment, or no treatment, get well in a few

days are not true gonorrhœa. All cases which continue beyond six weeks owe that continuance either to sexual excitements, to digestive disturbance, causing acidity of the urine, or to localized points of irritation, chiefly contractions of the urethral calibre at some point. In such cases, specific medicines and injections, of whatever nature are valueless. The cause must be appreciated, and treated independently of any preconceived notions of the specific character of the disease.

LESSON XXXIX.

Reasons why injections in the inflammatory stage of gonorrhœa are condemned—Dangers inseparable from their use—Nature of accidents due to their use—Use of injections in the chronic forms of gonorrhœa—Conditions which warrant their use—Mode of ascertaining such conditions—Explanation of their curative action in certain cases—Method of management—Illustrative formula—Manner of administering injections in suitable cases—Gleet—Nature of—Physiological conditions producing it—Manner of its development—Character of urethral inflammations differ in degree and not in nature—Products the same from whatever cause—All susceptible of developing a contagious element—Whether arising from mechanical or from gonorrhœal causes.

Condemning as I do all injections during the inflammatory stage of gonorrhœa, I have not considered their possible utility in the stage of decline, simply because I do not consider them an essential feature in any case. Furthermore, in the indiscriminate and perfunctory way in which they are usually administered, I think that even in the non-inflammatory stage of gonorrhœa they are productive of more harm than good. I have seen quite a number of cases of acute prostatic inflammation (occasionally going on to the production of abscess), which I have been quite satisfied were caused by driving an injection of ordinary strength, into the deeper parts of the urethra. To the same cause I have also attributed the accession of the epididymitis, which I have frequently met in cases of chronic urethral discharge while injections were in use. I feel satisfied that pus from the anterior urethra, is in this way, carried to the deeper and healthy portions of the canal, with the effect of establishing a new process of contagion in that region. Drs. Bumstead and Taylor (p. 57), are inclined to deny the possibility of such an accident, because the patient is directed to urinate before injecting, claiming that thus, the pus is all washed out of the canal and none is left to be projected back by the injection. It seems to me more probable, that with the fullest urination enough might remain in the crypts and follicles which

look forward, to furnish a dangerous element, on a washing of the urethra *backward* with the injection. Besides this, the great majority of patients, no matter how thoroughly instructed, occasionally omit the precaution. There is a great difference in the receptive power of patients in the matter of injections: With some they are introduced with great difficulty beyond the nib of the syringe used; in others the fluid passes, with slight force, well into the deeper urethra, and in occasional subjects even into the bladder.* My chief objection, however, to the use of injections is, that however well administered, and judicious, they are seldom required, except when the discharge is kept up by mechanical influences, and that, in such case, the true cause of its continuance, is masked by the astringent effect of the injection, often affecting an apparent cure, only to disappoint and vex the physician, and his patient, by repeated recurrences, as soon as the temporary effect of the injection has passed off. I would, therefore, while admitting that, in the absence of mechanical obstructions, the discharge may be lessened by use of astringent injections of various kinds, prefer, for the reasons above cited, to defer their employment until their necessity was indicated, after the fourth week, by the continuance of the discharge and the failure to detect any mechanical causes for its continuance. When, after a longer or shorter time, the acute symptoms of an attack of gonorrhœa have subsided, and there remains simply a muco-purulent, painless discharge, examination should be carefully instituted, with the view of ascertaining the exact point to which the disease has extended, and, as nearly as possible, the pathological condition

* A very general impression exists in the profession that fluids are with difficulty injected into the deeper parts of the urethra by an ordinary syringe, and that to force them into the bladder, by that means, is a physical impossibility. The positive statements to that effect by various authors (Acton, Milton, etc.) would tend to confirm such a belief. Within the past two years I have had three patients who were able to inject their respective bladders by means of an ordinary Davidson's syringe, one of them throwing in a pint of water, in my presence, then emptying the viscus—refilling and discharging it three times in succession. I am, therefore, convinced that it is judicious to limit the distance we desire to medicate, by pressure on the canal at a given point.

upon which the continuance of the discharge depends. This may be done, in a rough way, by pressing the walls of the urethra together and squeezing out the discharge from the meatus, making the pressure farther and farther back, until no more fluid can be made to exude. In the absence of any tenderness, or uneasiness, beyond the point so examined, you may conclude that the disease has not extended beyond that limit. If, in addition, a fair-sized bulbous bougie fails to detect any special points of tenderness, it may be concluded that the difficulty is dependent upon the first of the causes mentioned, viz., *a want of recuperative power in the epithelial structure*, and that there is sufficient of the gonorrhœal influence, to keep up an exaggerated desquamative action, though not sufficient to excite acute inflammation. The additional fact, that the membrane is kept constantly bathed in fluid, also retards the return to a normal condition, by diminishing the cohesive power of the superficial cell growths. The indications for treatment then are, to apply such local means as are most likely to diminish the excess of fluid, and to stimulate the membrane to a more complete performance of its functions. Solutions of the salts of zinc, lead, and iron, combining astringent and stimulating properties in various degrees, are found well calculated to meet this double requirement. Vegetable tonics and astringents are also of value. The more thoroughly the epithelial products in the discharge are degenerated, the more stimulating and astringent is the application required; so that, when the discharge is thoroughly purulent, the more stimulant salts, as the chloride, sulphate, or acetate of zinc, etc., will be found most beneficial; the more it approaches the mucous character, the more simply astringent should be the application. Under all circumstances, where a simple atonic condition perpetuates the discharge, no solution of any sort should be used of a strength sufficient to produce a caustic effect. Stimulation alone is required, such as results from solutions of the sulphate of zinc, or the acetate of lead, alone or in combination, and of a strength varying from one to three grains to the ounce of distilled water. When the discharge is not

wholly without pain, I am accustomed to add two or three grains of the extract of belladonna to the ounce. When the discharge is small in quantity and chiefly mucous, the acetate of lead, grains one to three; the persulphate of iron, grains three to five; tannic acid, grains five to ten, are often promptly efficacious. The power of *phenol* (the so-called *carbolic acid*) to modify and arrest suppurative action, wherever located, is now generally admitted. A solution of from one to three grains to the ounce of distilled water is often of value. A bland solid material like the oxide of zinc thoroughly pulverized may be added to any injection with occasional advantage, especially if the urethra is still sensitive—thus :

R. Zinci Oxidi.....	3 ss.
Zinci Acetate.....	gr. viii.
Aqua Calcis.....	3 iv.
M.	

Adding aqua calcis, which seems, in some cases, to increase the efficiency of the injection. Whatever form of syringe is used, the chief point of importance is to secure the limitation of the injection to the diseased portion of the canal alone. Thus, taking any one of the ordinary syringes in use, slip on its extremity the end of a soft velvet-eyed catheter (Tiemann's or its equivalent), of a length proportioned to the distance required to reach the furthest point of diseased membrane, and of a size not more than 20 to 24. After urination, fill the syringe, introduce, well oiled, slowly, to desired point, discharge it gently and completely, and retain from half a minute to two or three; repeat three or four times a day, unless this procedure causes irritation, then it, and all other applications by injection, may be judiciously withheld, and the case relegated to the list of troubles known under the title of gleet.

The secretion of the urethral mucous membrane serves as a protector, and lubricant, for the preservation of this membrane from contact with the irritating urinary fluid. It is made up of germinal granules—particles of bioplasm (Beale), which rise up through the interstices of the sub-mucous cellular tissue,* are trans-

* Rindfleisch, Pathological Histology, Am. Ed. pp. 43, 99 *et seq.*

uded through the basement mucous membrane, and become organized as the protective and lubricative epithelial cells of the urethral mucous membrane; and where the conditions of its evolution are in every respect perfect, in quantity just sufficient for the lubrication and protection of this structure. This is never sufficient to be perceptible to the naked eye, except as a moist glazing of the surface. Any excess is always the result of an abnormal stimulation of the natural processes, except in a single instance, purely physiological, when it proceeds from erotic excitement, and appears at the urethral orifice as a transparent mucous exudation, which passes off with a cessation of the nervous impression which provoked it. The causes which unduly increase the secretion of this membrane (and in speaking of the urethral mucous membrane, I include the glands, crypts, and follicles, made up of its local reduplications), are to be divided into two classes:—first, active inflammation set up by contagion, or clap; and second, mechanical injury or obstruction, such as urethritis, from lodgment of calculus, or injuries caused by irritant injections, or instrumental violence, or from urethral stricture.

The first effect of an approaching inflammation of mucous membrane is an increase in the natural secretion. The mucous cells are hurried along, through their different stages of development, and, as the amount of secretion increases, it is less and less perfectly elaborated. The germinal material is drawn to the surface with increasing rapidity, until cells, which, in health, pass through a gradual development, from the germinal granule to the fully formed epithelial scale, now appear as a mass of emasculated corpuscles—*pus cells*, which constitute what we are accustomed to designate as a purulent discharge.

The inflammation is thus characterized, during its continuance, whether arising from contagion or from mechanical or traumatic causes. The character of inflammation in the urethral mucous membrane, varies in *degree*, rather than in *kind*. Its products are, to all appearance, similar, whether the result of gonorrhœal

contagion, or from injury caused through instrumental or mechanical interference alone. The duration of the inflammation varies, as the cause is more or less vicious in its onset, or more or less persistent in its influence. An inflammation set up by a gonorrhœal contact will continue, in spite of the most efficient and judicious treatment, for several weeks, while the inflammation caused by the forcible introduction of a sound through a narrow meatus urinarius, *may* subside in a few days, and yet circumstances, *wholly unconnected with contagion*, may elevate this latter discharge, from a purely traumatic inflammatory product, so that it may communicate a disease, to a perfectly healthy individual, in no way distinguishable from a gonorrhœal inflammation.

LESSON XL.

GLEET.

Pus from a gonorrhœa contagious in the outset—Pus from simple urethritis gradually elevated to the point of contagiousness—This through various well-recognized causes—Importance of this positive in practice, also in a medico-legal point of view—Definition of gleet—Usually considered a chronic gonorrhœa—Evidences that it is often produced by purely mechanical conditions—Mr. Dick's views dissented from—Urethral stricture the most common cause of gleet—Urethral sinuses a possible cause—Dick, Le Roy d'Eliolles and Sir Henry Thompson in proof of stricture as a cause of gleet—Bumstead and Taylor, also Van Buren and Keyes, supporting this view—Necessity of examining for stricture in all cases of gleet—Ordinary sounds valueless for determining the presence of stricture—Value of the urethrometer as a means of diagnosis—Description of the urethrometer.

An inflammation, set up by contact with pus, from an acknowledged gonorrhœa, *at once* partakes of the vicious, contagious character of the inflammatory products from which it was derived. A simple urethritis *may* continue simple, and recovery take place within a short period, or it *may* be aggravated by various influences, such as vinous or sexual excess, contact with uterine or vaginal secretions, prolonged physical exercise, or from simple mechanical irritation, in a strumous or gouty diathesis, until it shall have *acquired* the property of contagiousness. Arrived at that point, urethritis of non-venereal origin does not differ in any way from that which has been originally acquired by contagion. The *contagium*, or contagious element present in gonorrhœal inflammation, would seem to be due to an acquired viciousness, from the fact that this *contagium* may be developed, or induced, in simple urethritis, by the various causes above enumerated, independently of contact with the gonorrhœal secretion. This position, *most important in practice, as well as in a medico-legal point of view*, is capable of substantiation by eminent authority, and besides, I have personal knowledge of its truth, from a number of carefully observed and re-

corded cases. The active stage of an inflammation of the urethral mucous membrane is called an *urethritis*, when resulting from causes independent of venereal contact, and when referable to a contagious origin, it is termed a *gonorrhœa*. Its duration in the great majority of cases may be set down as four or five weeks. In the cases where complete recovery does not take place within this time, there is usually a subsidence of the more acute symptoms, and the case is then characterized by a painless or nearly painless discharge, more or less profuse, and more or less purulent, which persists, in spite of the most earnest and judicious treatment by internal and local remedies, for weeks, perhaps months—often years. At times reduced to a mere secretion, which sticks the lips of the meatus together, when, upon a slight indiscretion in diet, a little sexual or vinous indulgence, within a few hours it may return as a free and possibly painful discharge. This chronic form of urethritis, which has, from time immemorial, afflicted humanity, and which has probably been the source of more trouble, to patients and surgeons, than any other known difficulty, is familiarly known as GLEET.

It is usually considered either as a sort of chronic gonorrhœa, and treated on the same general principles (by internal remedies and local injections), or is looked upon as the result of a debilitation of the urethral mucous membrane, but having no specific or contagious property associated with it, and is treated by specific and local means, with the addition of some constitutional remedies addressed to the condition or diathesis upon which the continuance of the difficulty is supposed to depend. Now, if it can be established that gleet is the result of a *mechanical* condition, that it may be produced, without the previous occurrence of a gonorrhœa, by a simple obstruction to the free discharge of urine through the urethra, and that this obstruction may occur as a result of *any* inflammation or injury which shall implicate the sub-mucous urethral tissues, it will then be clear that no treatment, which is not based upon the detection and removal of the me-

chanical difficulty, can be more than palliative. And if it can be shown, that the detection of *contraction* is possible *in all cases of gleet*, and that its removal *is certain* to result in the cure of the gleet, the proof of the non-specific character of gleet may be considered established.

Mr. Henry Dick, of London, whose brochure on the "Pathology and Treatment of Gleet" † is in my opinion the most valuable contribution to the literature of this subject in any language, says, "Gleet is always the consequence of a clap. I have never seen it idiopathically appear without clap, except in cases of disease of the prostate gland or the bladder, I would not say that idiopathic gleet never exists, but I have never seen it." This statement conveys the impression which was formerly accepted by the profession in regard to the cause of gleet, and has been a source of frequent error both in diagnosis and treatment.

Acute urethritis, from whatever cause, and it acknowledges many, may be stated as a self-limited disease. A disease which, under various methods of treatment by internal remedies, such as copaiba, cubebs, sandal-oil, etc., by alkalies and diuretics of various kinds, by local injections, such as sulphate of copper, sulphate of zinc, acetate of copper, acetate of zinc, acetate of lead, nitrate of silver, any and all of the mineral salts or vegetable astringents, preparations of carbolic acid, liquid glass (silicate of soda), fuller's earth, or any one of the thousand injections which have been used and lauded for their curative influence on acute urethritis—or by no treatment at all—has a tendency to get well within a limited time, and that time may be stated to be about four weeks. Dr. Bumstead ‡ formulates the experience of the profession, past and present, in the statement that the average duration of the disease is "*three or four weeks.*" "*Greater success on the average,*" says Dr. Bumstead, "*is probably not attainable by any means with which we are at present ac-*

† Published by Baillière Bros., in 1858.

‡ Bumstead on Venereal Diseases, Phil., 1870, p. 92.

quainted." I have met quite a number of well authenticated cases, where there was a history of a severe gonorrhœa with inflammatory complications, which recovered within this time, under the use of *baths alone*; others, where homœopathic treatment was resorted to; and others again, where *no treatment at all* was had, and where recovery came within the four weeks. Now, while I am sure that a variety of remedies, local and general, may, when judiciously employed, enable the patient to pass through the disease with much more comfort, and less danger of subsequent trouble, than without treatment, yet I am quite prepared to state as my opinion, based upon a large personal experience in the treatment of this disease, by the most approved methods, *that it is a self-limited disease in its acute form*, and, when it lasts longer than four weeks, or when apparent recovery takes place, and the discharge breaks out afresh without new exposure, *that there is a complication present*, either the result of the current inflammatory trouble, or of some inflammation antecedent to the attack, which causes the continuance of the trouble, and which must be appreciated and removed before any *permanent* cure can be had. This complication is URETHRAL STRICTURE—Stricture in the sense of an abnormal contraction of the urethral calibre, at some point at or between the meatus urinarius and the bulbo-membranous junction; and I will furthermore state it as my conviction, that the continuance of the inflammatory trouble (and whenever there is an urethral discharge, there is incontestably, more or less inflammatory trouble) is due to the irritation kept up by the arrest, more or less complete, of the stream of urine at the point of Stricture, and by the imperfect emptying of the urethra after urination. *Chronic gonorrhœa—Gleet*—also variously designated as prostatic, gouty, scrofulous, is dependent, as a rule, on abnormal contractions of the urethral canal. The only exception that I recognize (aside from the presence of polypoid, or warty growths in the urethra) is the engagement of urethral sinuses (as the lacuna magna, or some one of those occasionally met near the meatus, possibly deeper down), and these

I have never found engaged, unless more or less coarctation at an anterior point was also present. *Chronic urethral discharge means Stricture.* I am quite aware that well-defined Stricture may be present, without a palpable discharge, but there is always to be found evidence of a certain degree of irritation present in all such cases, although there may be no appreciable discharge. When, however, there is *discharge*, there will, in every case, be found, if the examination is efficiently made, a *well-defined and unmistakable point of Stricture.*

The dependence of continued inflammation in gonorrhœa, and of the continuance of chronic urethral discharge, upon the presence of Stricture, is no new discovery. All the recent approved authorities recognize it. Dick was the first, so far as I know, to insist upon a thorough examination of the urethra for obstruction in every case of gleet, and his instructions for the examination of the urethra with the bulbous bougie of Le Roy d'Eliolles are minute and complete. Sir Henry Thompson says in his work on Stricture of the Urethra, page 90: "I have known instances in which this symptom (gleet) has been so prominent that the patient has been treated for a gonorrhœa, during a period of many weeks, without suspicion arising that a Stricture existed, which was its sole cause; the subsequent recognition of the contraction and its cure having been attended with the complete cessation of the discharge."

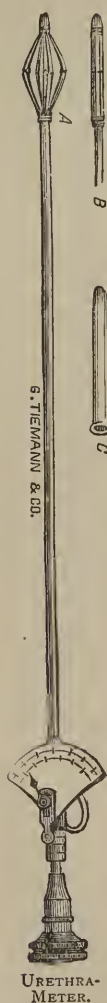
Dr. Bumstead (Bumstead on Venereal Diseases, 1870, p. 93,) says: "It is not impossible that there is stricture of the urethra, *which is the most frequent cause of the continuance of a gleety discharge following an attack of gonorrhœa.*

Van Buren and Keyes, p. 71, say: "*The most common of all causes for continued gleet is stricture, already present or forming,*" and yet, in spite of the unmistakably pointed and positive statement of these, and other valued authorities, the usual treatment of chronic gonorrhœa and of gleet at the present day is by *nostrums*, sandal oil, copaiba, urethral injections in multiplicity, and the use of medicated bougies and sounds. And why? It is

not that urethral stricture is doubted as a possible factor in the case; it is not that this is unrecognized as the most *probable* cause of the difficulty; but because the examination of the diseased urethra is conducted with *imperfect instruments*, and that, as a consequence, no exhaustive examination of the canal is made. *The least contraction at any point in the urethral canal has been demonstrated as capable of causing the indefinite continuance of an urethral discharge and even of establishing it, de novo, without venereal contact.** If this is the fact, then some means for the detection of the *least* contraction of the urethral canal must be used in order to ascertain the presence or absence of stricture. To this end, the first step must be to ascertain the *normal* urethral calibre in the presenting case. It has been proved that every urethra is an *individuality*, and that no *average standard* is of use in examining a given urethra. The establishment of the normal calibre is the first step towards ascertaining whether or no there be any coarctations in its course. This can only be accomplished by *actual measurement* by means of an *urethra-meter*. The proposition is a purely mechanical one. Given a tube, urethral or otherwise, in which it is desirable to ascertain whether or not there exists a contraction of its *calibre* at any point, the first question to settle is *the size of the tube*; this effected, the determination of any *variations* becomes easy; without it, impossible. The bulbous bougee was relied upon by Le Roy d'Etoilles, Dick, and others, many years since, and it has been growing in favor very slowly but surely, so that now it is an indispensable instrument in urethral examination for stricture. Explorations with an ordinary sound, catheter, or straight bougie, are practically valueless in determining the size, locality, and number of strictures in a given case. The presence of a contracted meatus (a very common complication, as a result of infantile balanitis or gonorrhœal inflammation) makes the detection of any deeper stricture, if of greater calibre, quite impossible. The sudden

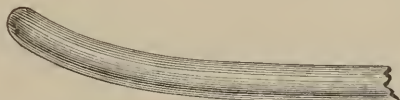
* Page 20.

release of a bulbous sound or bougie, of a size which, by firm but gentle pressure, may be made to pass through the meatus, indicates, as it slips into the fossa navicularis, that contraction is present at that point; and the relief of the contraction becomes a necessity before the deeper canal can be efficiently explored, or the normal calibre of the urethra be estimated. It is here that the value of the urethra-meter in the diagnosis of strictures becomes evident. This should be introduced through the contracted meatus (when this is not below 12° F.), and down to the bulbo-membranous junction. At this point the bulbous portion of the instrument is to be expanded, by means of the screw at the handle, until a feeling of fulness is experienced, when, if there is no stricture at the point of trial, the pointer on the dial plate will indicate, with sufficient certainty, the normal calibre of the urethra under examination. Now, drawing the instrument slowly out, if stricture is present, the bulb will be arrested at that exact point. The screw is then turned, diminishing the size of the bulb, until it slips through the coarctation, when a glance at the dial will show the calibre of the stricture. This subtracted from the figures indicating the normal calibre, will give the *precise value* of the contraction. The remainder of the canal, examined in the same way, brings the bulb finally to the meatus, where, in the same manner, the greater or less degree of deviation from the normal size will be shown. Sir Henry Thompson* as late as 1882, still claims that all that is necessary for diagnosis of stricture is a slightly curved, blunt, flexible bougie. Thus he says: "Take a flexible gum elastic bougie, slightly curved toward the point, with a blunt end (since a tapering point will not mark distinctly



* "Diseases of the Urinary Organs." London, 6th ed. P. 8.

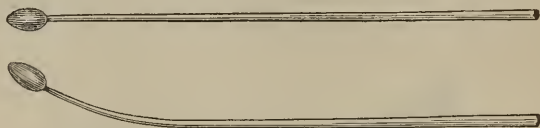
the site of stricture) not larger as a rule than 10 or 11 of our scale (20 or 21 of the French) and pass it very gently and slowly into the bladder. If it goes easily, above all if it is withdrawn without being held, and slides out with perfect facility, take my word for it, he has no stricture and *quoad* obstruction, wants no use of instruments whatever."



SIR HENRY THOMPSON'S BLUNT-ENDED BOUGIE USED FOR DIAGNOSIS OF STRICTURE.

A careful examination of over a thousand urethras by means of the urethra-metre, warrants me in stating that the average calibre of the meatus urinarius is not less than 24 of the French scale or 12 of the English, and that the average calibre of the male urethra is not less than 32. With such facts as a basis of statement, it is not too much to claim that Sir Henry Thompson's plan of examination is wholly inefficient for practical purposes, and would, if accepted, inevitably lead to errors in diagnosis and treatment. In my work on stricture of the male urethra (p. 70, *et seq.*), the foregoing résumé of Sir Henry Thompson's mode of ascertaining the presence or absence of stricture in a grave case was quoted, and the reasons for disputing its value were given at some length. I omitted to state that metallic bulbous bougies had been previously in use by him, not from any desire to deprive him of the credit of familiarity with the use of those valuable instruments, but because he stated distinctly that the blunt-ended bougie was sufficient for all practical purposes, and that with later experience he had practically given up their use. In a private conversation with Sir Henry, during the meeting of the late International Medical Congress in London in 1881, he claimed that this omission did him great injustice. I therefore take this earliest favorable opportunity publicly to state, as I then agreed to do, that he *has* commended the use of the metallic bulbous bougies, and was once in the habit of defining the local-

ity of strictures with it. But, as he says, in his last edition, 1882,* with his increased experience he no longer finds it of service (p. 39). It will be seen that the injustice of my omission was not very great. Sir



SIR HENRY THOMPSON'S METALLIC BULBOUS BOUGIE.

Henry speaks in its praise, however, on p. 39 of his fifth edition, 1879 (and also in the sixth, 1882, p. 20), thus: "*No other material slides so easily and smoothly through the urethra*, so that to employ one which passes roughly or distends unnecessarily, is to pay too high a price for the small amount of information it may convey." I agree most heartily and unreservedly with the view of Sir Henry that an instrument "which passes roughly or distends unnecessarily" is to be condemned. The metallic bulbous sound, however, if properly constructed as in the appended cut and judiciously used, is *absolutely free from both these objections*. Such a sized instrument only should be used as will pass without unnecessary distension of the urethral tissues. The size must be adapted to the size of the urethral orifice in any given case, just enough larger to test whether or not a contraction exists at this point. It may then be passed gently along until arrested at some deeper contraction, and then smaller and smaller sizes should be introduced until one is reached that, while easily yet snugly slipping through, is held on its return by the contraction. Deeper contractions must be treated in precisely the same way. The forcible use of such instruments is never necessary and never should be so used. Their size must always depend upon the size of the urethral orifice, which, as has been determined beyond the possibility of question, varies in different cases from

* "Clinical Lectures on the Genito-Urinary Organs," sixth edition,

eight or nine millimetres in circumference (when abnormal contractions are present) up to thirty-eight or forty millimetres circumference. Consequently sizes from eight to forty, increasing by one millimetre in circumference, are absolutely necessary in order to enable the surgeon to explore all presenting urethra without danger of overlooking stricture from lack of suitable means to discover it. The sizes are thus numerous in order to prevent the inducement to use undue force in the examination. The continuance of a gleet is not unfrequently due to contractions of small amount, even two or three millimetres circumference. On this account it has become necessary to be prepared to define contractions which in the absence of persistent gleet would not call for interference. It is only after exhausting all other measures, and the gleet still persisting, that attention to strictures of so small moment, comparatively, calls for consideration. In such cases it is hardly necessary to say that any other than bulbous instruments used for purposes of diagnosis (the only purpose to which they should ever be put) would be wholly inefficient.

The urethrometer may, it is true, be made available for the diagnosis of well-marked contractions in many cases. With this we have the great advantage of introducing it closed to the bulbo-membranous junction, and examining the canal from behind forwards, thus avoiding the possible discomfort in sensitive urethræ of introduction of bulbs at full size. But on account of its oval shape it is inefficient for accurate diagnosis in cases of slight contraction. Here the acorn-shaped bulb always defines with certainty. It will be observed that another advantage pertains to the use of the urethrometer, viz., that of enabling the surgeon to examine the urethra in the presence of a contracted urethral orifice.

LESSON XLI.

Henle on the size of the meatus urinarius—Errors of previous observers—Meatus urinarius no guide to the urethral calibre—Relation of the size of the meatus to the circumference of the flaccid penis—Stricture long recognized as a cause of gleet—Imperfect means formerly in use for examining the urethra for stricture—Use of the endoscope not efficient in discovering the real cause of gleet—Case in illustration—Gleet as a rule dependent upon stricture—Efficient exploration of the urethra always capable of discovering and locating stricture of the urethra—Complete division of stricture results as a rule in the cure of gleet—Degrees of gleet—Description of—Explanation of the mode of its production—Treatment by bougies, without exact knowledge of locality of stricture, empirical—Temporary results of such treatment—Complete division of stricture and suitable after-treatment the only plan through which gleet may be permanently cured.

Henle* has demonstrated the meatus urinarius to be of uniform size with the fossa navicularis, and thus from an anatomical stand-point, has demolished the error which has been disseminated by so many authorities, and which has achieved so much fictitious importance as a guide in urethral examination, viz., that the *meatus urinarius* is a *measure of the size of the normal canal*.†

What I desire now to make prominent is the fact that the best recognized authorities have long appreciated the value of stricture as an agent in the prolongation of urethral inflammation and irritation. Whenever it could be demonstrated by the imperfect means used, it

* Handbuch der systematischen Anatomie des Menschen, von Dr. J. Henle, p. 417.

† A constant relation appears to exist between the urethral calibre and the size of the penis with which it is associated. This is a fact demonstrated by careful measurements with the urethra-meter in several hundred cases, without a single exception being met. The proportion runs as follows: When the flaccid penis measures 3 inches in circumference, the size of the urethra will be 30 millimetres in circumference, or more. When it is $3\frac{1}{2}$ inches, it will be 32 or more; $3\frac{1}{2}$ inches, 34; $3\frac{3}{4}$ inches, 36; 4 inches, 38; $4\frac{1}{4}$ to $4\frac{1}{2}$ inches, 40 or more millimetres. When the urethra-meter is not available, this proportionate relation may be relied upon as not *over-estimating* the *normal* urethral calibre in any case.

was at once accepted as the probable cause of the gleet, and it was only when no stricture could be found that the surgeon was driven to the use of internal medication and topical application. The urethra was vainly explored for stricture, because the instruments in use were insufficient. The endoscope was the result of an intelligent effort to clear up the diagnosis in cases of gleet, where no stricture was found. Désormeaux, Cruise and others, discovered the granular spots studing the urethra in such cases, and the secret was apparently manifest. Topical applications through the endoscopic tubes apparently cured some, and gave temporary benefit to many; then an army of young endoscopists followed *en train*, believing, as taught, that the granular sensitive spots in such cases would, if not subjected to frequent ocular inspection and intelligent cauterization, result in true organic stricture. And yet after months of faithful work in this direction, the return of gleet, without new contagion, made it evident that the true cause of gleet had not yet been reached in such cases. I have the record of at least a dozen instances * where the difficulty was shown to

* The following is the record of a typical case of this sort:

Mr. W., aged 25, came under my care December 1st, 1872. Contracted first gonorrhoea early in June, 1872, was treated by injections locally, and alkalis internally, until August 1st, during which time he had no freedom from the discharge, nor from the acute suffering. At about this time, the vesical neck became involved, and he suffered most from frequent and painful micturition. Came under the care of Dr. —, a skilled endoscopist, who discovered numerous granular patches in the course of the canal, extending quite into the prostatic portion, and applications of a strong solution of nitrate of silver were made through the endoscope, which afforded temporary relief; urination still painful every hour. By September 1st, the discharge decreased to a slight mucus, following the use of pencils of tannin and glycerine. A spell of damp weather brought back the purulent discharge, with a return of perineal pain and frequency of micturition. Tannin pencils again used, but after continuing for four weeks, and no improvement, patient was put to bed, and hot hip-baths were administered every two hours, etc., etc. After five weeks of various kinds of treatment, local and general, he came to me from his bed, December 1st, 1872. On examination I found no difficulty in introducing No. 20 F. bulbous sound, and discovered a firm cartilaginous stricture extending from just within the meatus to half an inch back. This I freely cut with Civiale's bistouri caché. Immediately following the operation, he expressed himself as feeling "like a new

be a stricture near the meatus, which nevertheless admitted the usual-sized endoscopic tube (22 or thereabouts), and where the dependence of the granular spots upon this condition was proved by their complete disappearance, upon the cure of the contraction, without the aid of any other treatment whatever. This premises a conclusion, arrived at by the experience gained in a very large number of cases, viz., that *gleet is always dependent upon stricture*: that, while stricture may be present when there is no gleet, whenever there is a gleet (in the sense of a chronic urethral oozing or discharge), an intelligent and thorough exploration, with suitable instruments, will *invariably* discover a *distinct* contraction of the meatus urinarius, or a *readily recognized* coarctation of the urethra at some point; and further, that the complete restoration of the urethra to its normal calibre and suppleness, at the contracted points, will be required to warrant the statement that a *permanent cure* has been effected.

The complete division of stricture has, in my experience, resulted *uniformly* in its complete disappearance within a period varying from three months to one year, and the *cure of gleet has, as a rule, followed the complete division of stricture within a period varying from twenty-four hours to four weeks after the final operation.*

Let us now consider the various degrees in which gleet is presented to the surgeon.

First. When it is just sufficient to form shreds of inspissated mucus, which are observed on examination of the first washings of the urethra during the act of urination.

Second. When it is in the form of a simple, transparent exudation, only sufficient to glue the lips of the meatus

man." The discharge ceased within twenty-four hours, the perineal pain and frequency of micturition, and the *ardor urinæ* also ceased, and he returned to his duties, which were most active, on the following day, after having been laid up for over five months. *The urethral granulations subsided and finally disappeared within a few weeks without any local or general treatment.* His recovery was absolute and complete, and the only solution afforded was the *division of the stricture at the meatus*, to which the granular spots in the posterior part of the canal were undoubtedly due.

urinarius together, and not even enough to stain the patient's linen.

Third. When, on squeezing the penis and subjecting the meatus to pressure (as patients afflicted with gleet are very much in the habit of doing), a single drop of semi-opaque or creamy purulent fluid may be made to ooze out.

Fourth. When it is met as a thin, profuse, nearly or quite painless discharge, easily reduced in amount by astringent injections, but as readily returning on their withdrawal, and, even if apparently cured, returning promptly on the least vinous or sexual indulgence.

Fifth. When the discharge, thicker, decidedly yellow, and persistently profuse, exudes from an inflamed and pouting meatus, usually causing much redness and irritation upon contact with the preputial tissues.

Each and all the grades or varieties of gleet above enumerated and casually described may, it is believed, be proved to owe their persistence, if not their *existence*, to simple, localized, mechanical obstruction to the passage of urine.

The impetus which is given to this fluid during an ordinary micturition is of no insignificant character. The muscles of the diaphragm, abdomen and perineum combine to bear down, press against, support, and steady the bladder, while the active agents, the detrusor muscles, which interlace over the entire organ, exert an expulsive force sufficient to overcome the resistance of the sphincter vesicæ, and to project the urine in a full, smooth stream through the urethra, to a distance of several feet. This, however, gives but a faint idea of the effect which a prolonged resistance to the power of the muscular apparatus concerned in emptying the bladder may produce. In order to be fully appreciated, this should be observed in a person laboring under some obstruction to the passage of urine, such as occurs in urethral stricture. If the stricture is a slight one it may be apparent only in producing a want of rhythm in the muscular action of the urethra, which prevents a prompt and complete emptying of the canal. Thus it is that *dribbling*, after the act, is occasioned. When the strict-

ure encroaches to a somewhat greater degree, the stream is no longer full and strong, but becomes twisted, and is projected with less force, and now that the patient often finds himself exerting a pressure of many extra pounds in bearing down upon the bladder, the beginning of the effect of stricture begins to be realized. But let the case be one where the stricture has closed the urethral lumen, so that a continuous stream is no longer possible: the pressure becomes so great, that, after a time, not only does the urethra become permanently enlarged behind the stricture, but the urine is pressed backward, from the bladder, through the ureters, resulting in dilatation of the delicate tubes to many times their normal size, the pelvis of the kidney also participating in this forced dilatation, until a positive sacculation may be produced. This power by which the urine is propelled, certainly furnishes the requisite conditions necessary to establish a point of irritation in a urethra when stricture is present. It is only necessary to establish the fact, that the *normal resiliency* of the urethra is diminished at a given point, to prove that, during micturition, a perturbation in the stream *must* occur at such point, even if it is not sufficient to attract attention in any way. Hence the slightest contractions assume an importance which could not be inferred from the *apparent* freedom from trouble in passing the urine. They establish a localized point of friction, and, of necessity, an increased excitement in the vessels of the part, possibly only enough to disturb the complete elaboration of epithelial material, and to cause the shreddy deposit of the clear normal secretion to take the place; and this may occur, with very slight, or not even the least abnormal sensation being present. The presence of the mucoid shreds in the urine may be the *only* evidence of commencing trouble. But a permanent point of friction, once established, greater than the natural conservative power of the surrounding parts is able to counterbalance, obstruction is increased by the natural aggregation of plastic material at the point of irritation. In this way the tendency to recovery is com-

bated, and a permanent point of inflammatory action is established.

Thus the difficulty, which commenced simply as an obstruction to the resiliency of the urethral walls, progresses naturally and certainly, to the point of narrowing to a greater or less degree the calibre of the urethral canal.

The second point of importance is the incomplete emptying of the urethra after micturition, which occurs as a necessary consequence of anterior contractions. If the muscular structure is embarrassed, its function is imperfectly performed, and instead of completely emptying the canal of its irritating contents, a drop or more is retained, either to dribble away slowly within a few minutes after urination, or to be held, behind the contraction, by a spasmodic action (always readily set up in the vicinity of urethral irritations) until chemical changes heighten its irritative action, and it becomes capable of establishing new points of irritation, such as are seen in *granular urethritis*, so-called. It is not impossible or improbable that, as Desormeaux and Cruise have taught, the granular spots found in the urethra in cases of gleet *may* be the beginning of stricture; but it is positively true, that they may be, and most frequently are, the legitimate progeny of an *already-formed stricture*, anterior to the point of their location, and it is equally true that unless stricture has already occurred as a result of the granular urethritis, the cure of the anterior co-arctation will result, without other treatment, in the disappearance of the granulations, and a complete restoration of the canal to its normal condition. The treatment of gleet by a systematic introduction of sounds and bougies, medicated or otherwise, is based upon the idea of a possible co-arctation of the urethra at some point. Ordinarily this plan is resorted to in the most empirical way, simply because the introduction of sounds and bougies is recommended by authorities for the cure of gleet. By our most intelligent surgeons, it is directed to the dilatation of strictures, which have been suspected, or detected by the bulbous sound or bougie,

and with a full appreciation of the probable dependence of the gleet upon the presenting strictures.

That this plan, intelligently pursued, has often cured gleet, no one will for a moment gainsay; but that it permanently removes the *cause*, no one at this day is likely to affirm. Nothing is more distinctly laid down in the writings of authorities in regard to the treatment of urethral stricture, than that the results of dilatation are *always* of a *temporary* character. So that it is well understood, in cases of the cure of gleet by dilatation of the stricture, or strictures, upon which it is dependent, *subsequent* dilatation must be kept up *indefinitely*, at varying intervals, in order that the gleet may not again be established. For a permanent cure, a complete division of the contracting stricture must be had, and any treatment which falls short of this will, of necessity, fail in doing more than to temporarily remove the obstruction which has been the cause of the gleet.

LESSON XLII.

COMPLICATIONS OF GONORRHŒA—BALANITIS AND BALANO POSTHITIS—PHYMOSIS—PARAPHYMOSIS—FOLLICULITIS—EPIDIDYMITIS—PROSTATITIS—CYSTITIS—STRICTURE—REFLEX IRRITATIONS AND NEUROSES.

Balanitis and balano-posthitis—Definition of—Nature of—When complicated with contracted preputial orifice—Liable to be mistaken for urethritis—Results from various causes—May be of simple or of contagious origin—Treatment. Phymosis—Definition of—Causes which produce it—Palliative measures—Radical cure. Paraphymosis—Definition of—Causes of—Early treatment important—Method of procedure—Symptoms of this accident—Liability of being overlooked—Importance of early recognition—Case in illustration. Folliculitis—Description of follicular sinuses—Situation of—Tendency of such sinuses to keep up a urethral discharge—Difficulty of treatment—Remedies and procedures found useful—Urethral stricture a common cause of folliculitis—Signs and symptoms of its presence—Extension of sinuses by suppuration—Urinary fistulæ resulting—Varieties of accident caused by escape of urine into the peri-urethral tissues—Cases in illustration, showing that while in some cases the accident is not important, in others it may result in urinary fistulæ, and sometimes in extensive extravasation of urine.

Balanitis, and *balano posthitis*, are terms applied to inflammation of the semi-mucous membrane covering the glans penis and its preputial reflection. This partaking of the nature of both the mucous membrane and the integument, when attacked in inflammatory process, presents some peculiarities common to both. At first permitting the exudation of cell elements through its interstices, but finally resulting in a stripping off of the epithelium, producing destruction of the superficial layers in patches. At this point, it is characterized by a free purulent exudation, which, as it always and only occurs in association with a redundant prepuce, may, when this is contracted at its orifice, be difficult to distinguish from the purulent discharge of a urethritis. It is termed *balanitis*, when the inflammation is confined to the covering of the glans penis, but when this extends

to the contiguous mucous membrane, reflected from the fossa glandis to the preputial orifice, it receives the title of *balano posthitis*. Like urethritis, it acknowledges several causes for its initiation. It may result from the irritation caused through retention of the normal sebaceous secretions by a redundant prepuce, or through the occurrence of herpetic eruptions in this locality. Or, it may be caused by the irritating influence of vitiated simple secretions of vaginal or uterine origin, through sexual contact; or through the secretions of a gonorrhœa, either in the female with whom contact has been had, or through the retained secretions of a gonorrhœa, previously acquired by the subject of the balanitis. In these latter cases, it may be appropriately termed an external gonorrhœa. When from simple causes, it is readily cured by cleanliness and the application of some simple stimulant or astringent. When the result of the extension of a gonorrhœa, the difficulty is more rebellious, and as is usually the case when associated with a contracted prepuce, will require the cure of the gonorrhœa, as a preliminary measure. A solution of the sulphate of iron of the strength of 5 or 10 grains to the ounce, will usually cure the simple forms, in the course of a day or two, and the occasional application of cologne water, will usually harden the parts, sufficiently to prevent its recurrence. Circumcision is the only means by which the recurrence of this trouble may be permanently prevented.

Phymosis is that condition of a redundant prepuce which is so contracted at the orifice, that its retraction over the glans, is rendered difficult or impossible. This may result from congenital condition, or from inflammatory causes, recent swelling or cicatricial thickening of the preputial tissues. The former may result from inflammations from simple or gonorrhœal causes; the latter is usually incident to the deposition of cicatricial material, from chancroidal inflammation, or from syphilitic deposit. Simple balanitis may produce it. Gonorrhœal inflammation is very likely to, and this without the occurrence of balanitis. Hence, in many cases of gonorrhœa, complicated with a redundant prepuce, this

accident often occurs, and usually through the irritation of the gonorrhœal secretions confined in the preputial cavity. For this reason frequent injections of a weak antiseptic or astringent solution, becomes necessary to cleanse the parts. For this purpose 5 grains of the sulphate of iron to two ounces of water, or 2 or 3 grains of carbolic acid, combined with soakings in hot water, may be used, to reduce the inflammatory condition. If this does not prove effectual, slitting up the prepuce on the superior aspect may become necessary to give effect to the foregoing treatment.

Paraphymosis is that condition of a contracted preputial orifice, when, it having been retracted behind the corona glandis, cannot readily be drawn forward. The constriction thus produced, by consequent arrest of venous return, causes the parts to become engorged, increasing the swelling and inflammation. This, if not relieved, may go on to destruction of the preputial tissues by gangrene. Such an accident is not infrequent in the course of a commencing gonorrhœa. On its first occurrence, the paraphymosis may be reduced by the following method. First, lubricating the parts thoroughly with vaseline or sweet oil, then encircling the penis with the forefinger and thumb of one hand, compressing the glans with the concentrated fingers of the other, getting as closely under the constricting band as possible, push the glans through the ring formed by the tissues of the preputial orifice. Should this procedure fail after a full and intelligent trial, the constricting band must be lifted between the thumb and forefinger if possible, if not, by the pressure under it of a grooved director, and completely divided. The cut will immediately become transverse, and with or without a stitch or two, usually heal by first intention in a couple of days.

Sudden swelling of the preputial tissues, at any time, should call attention to the possibility of its being caused by this accident of paraphymosis, as from the mobility of the parts involved, the integument of the penis may easily roll forward, and conceal the point of constriction, as the following case will illustrate :

A general surgeon of many years' experience called upon me to ask a consultation in a case which he supposed to be a thrombus of the dorsal artery of the penis and a resulting gangrene of the anterior portion of the organ. The history was as follows: A young man of twenty-four, previously to taking a long walk, for convenience in walking, had swung up his testicles in his handkerchief, and fastened them by means of an india-rubber band, brought over the penis, at its junction with the body. He had worn it, in this position, during a walk of several hours, and before getting home, complained of a sense of discomfort from the tightness of the band. This was not so great but that he allowed it to remain for an hour or two after his return home, when, on taking off the band, he found quite a little redness and a deep crease was left. On rising in the morning, the penis was considerably swollen, and he sent for the surgeon, who, on hearing the alleged cause of the trouble, ordered rest and a saturnine lotion. The swelling and inflammation increased steadily, with some pain. By the third day, a spot of gangrene appeared on the redundant prepuce, at a point corresponding with base of the glans. Diagnosis was, gangrene, caused by thrombus of the artery of the dorsum. The whole penis was greatly swollen, and anteriorly, of a violet hue, with a black slough as large as a quarter-dollar about an inch from the extremity of a prepuce. The entire destruction of the glans had been accepted, by both the surgeon and the patient, and the latter, during the temporary absence of the surgeon in coming to see me, had, as he said, tried several times to screw his courage up to the point of jumping out of his fifth story window. On taking hold of the penis with thumb and forefinger, I made a little pressure inferiorly, and the uninjured glans penis readily protruded from the opening caused by the slough. Both surgeon and patient were greatly surprised and gratified to find that no damage had been done to the glans. The explanation of the trouble was soon made plain. A short time before taking walk previously spoken of, the young man had a connection. The anterior border of a narrow

prepuce, was forced back of the corona, during the act, and the redundant tissue had rolled forward, thus concealing the accident. The coincidence of the rubber band applied over the organ, but which had absolutely nothing to do with the subsequent trouble, caused the error in diagnosis. The attempt of nature to effect a circumcision in this case, was supplemented by an excision of the remaining portion of the prepuce, and the case went on to a satisfactory termination in a few days.

Folliculitis.—One of the possible causes of a continuance of a gonorrhœal, or gleet discharge, is the engagement of the follicular sinuses which open into the urethra in the various parts of its course. At the bottom of these sinuses, which are of varying size and depth, are the glands peculiar to mucous membrane, the so-called mucous glands of Littre. The minute sinuses leading from these, perforate the mucous membrane obliquely; some looking forward, and some in the reverse direction, having a diameter from one fifth of a millimetre downwards, and varying from one half millimetre to several millimeters in depth. They terminate in follicular, or bag-like pouches, or in racemose dilatations, which are imbedded in the substance of the corpus spongiosum. These coming to be involved in any inflammatory process of the mucous membrane, when, as sometimes occurs, they are of considerable length, may hasten the inflammatory process, from various causes, long after the remaining portions of mucous membrane have, through varied treatment, been restored to a healthy condition. This is one of the most difficult troubles to reach, by local measures, of all the conditions which tend to keep up a chronic urethral discharge. Very thorough cleansing of the urethra is necessary to free these crypts and sinuses from the unhealthy secretions which accumulate in them, and, inflammation in them creeping out, doubtless, often reinfect the mucous surface in their vicinity. Irrigation of the urethra, in these cases, by means of a bulb syringe (Davidson's), to which a four or five inches of soft rubber catheter is attached, and using half a pint, or more, of medicated fluid, at each sitting as originally recommended by Mr. Harrison of Liverpool, I have

often found serviceable in clearing up the remaining disease in such cases.

The sulpho-carbolate of zinc, as suggested by Mr. Harrison,* in the proportion of two or three grains to the ounce, has, in my experience, proved perfectly efficacious in a considerable number of cases. Great care, however, must be taken to prevent the forcible impingement of the injection against the deeper urethra, and to make sure that the return stream is not obstructed. I have seen several cases where an acute prostatitis or an epididymitis could be readily accounted for in no other way than that above suggested. The use of a large perforated pipe, attached to an ordinary hard rubber syringe, as recommended by me several years since, has also formed a successful aid to cure in many cases. The pipe is made to correspond in size with the normal urethral calibre in any given case. In this way, the folds of the urethra are obliterated, and the injected fluid is thus more certainly brought into contact with the diseased follicles and sinuses. Any one of the many astringent injections in common use for arrest of gleet discharges may thus be used, and often with prompt benefit. It will, however, be found, that failure of the means above alluded to will frequently result. In the majority of such cases, a careful examination will discover, that the folliculitis is kept up, by localized points of stricture, often only slightly narrowing the urethral calibre. Behind such strictures, mucus accumulates, and is discharged at every urination, in the form of shreds or rings of inspissated mucus. In certain cases the follicular sinus may be closed, and the suppurative process burrows into the adjacent tissue, and may thus find its way, by a fistulous canal, opening at some point, either in the vicinity of the frenum, which is common, or on the undersurface of the penis, further back. Or it may stop at any point, and form a hard bunch, a neoplasm, which remains stationary for months or years. Or, again, suppuration may occur, and, opening back

* Harrison on "The Surgical Disorders of the Genito-Urinary Organs," London, 1880, page 12.

into the urethra, permit subsequent passage of more or less urine into its cavity, increasing the inflammatory and suppurative action, in proportion to the amount of urine exuded. This accident is more likely to occur during the acute stage of gonorrhœa; the neoplasm is more common in long-standing gleet.

It will thus be seen that we may have three varieties of accident resulting from a folliculitis: 1st, a simple extension of the sinus, from burrowing through prolonged inflammation of a low grade, finally opening, in some cases, externally, about the meatus, or in the vicinity of the frenum; 2d, the exudation into it, of a trace of urine, sufficient to cause a plastic exudation, and a hard bunch, varying from the size of a small pea to a filbert. The connection with the urethra being cut off it may thus remain for months or years; 3d, when the processes are more active from instillation of an increased amount of urine, an acute abscess results, or through the ulcerative process, an extravasation of urine into the surrounding tissues, may occur, so extensive as to cause extensive infiltration and sloughing.

Thus as illustrative of the first variety:

A young man came to me presenting a pustule the size of a pin's-head, on the right side of the meatus urinarius, midway of the glans, and about one-third of an inch from the orifice. Believing it to be the result of a vicious connection four days previous (as it had quite the appearance of a follicular chancroid), I cauterized it with a fine glass point charged with nitric acid, and felt warranted in giving the assurance of speedy cure. Two days following, the patient presented himself, with the lesion cicatrized, but a similar pustule had developed about a quarter of an inch above the site of the first. Confirmed by this, in my view of the chancroidal origin of the difficulty, the second was likewise touched with the nitric acid. On the following day my patient again presented himself, announcing that the first pimple had again broken out, and that he also had the *clap*. Making pressure of the glans, a drop of creamy pus exuded from the meatus, and also a minute quantity of the same sort from the two little orifices on

the site of the pustules. Struck with the similarity in location and appearance of these little openings with those of Case I., I at once set about exploring them. A fine silver-wire probe passed readily into one and out at the other; the lower seemed superficial. Into the upper, however, I succeeded in passing the probe nearly half an inch backward and upward, on a plain parallel with the urethra. Feeling certain that a communication existed, through this sinus, with the urethra, I introduced as far as I was able the blunted point of a fine hypodermic syringe; and, having previously insinuated a bit of lint into the fossa navicularis, I injected a solution of indigo. After several unsuccessful trials, at last, on the withdrawal of the lint, it was found slightly but distinctly stained with the indigo. Shall we infer in this case that the trouble was originally a simple folliculitis creeping along an accidental sinus—possibly producing it—opening on the surface of the glans, and finally breaking also into the fossa; or was it of gonorrhœal origin, having its initial point in the external follicular opening, and after seven or eight days cropping out into the urethra? No solution of continuity could be detected in the fossa navicularis, nor was there much tenderness at any point. A ten-grain solution of the nitrate of silver was injected into the fistula, with the apparent effect of closing it entirely. The passage between the two points was slit up and cauterized. The gonorrhœa (if it was a gonorrhœa) extended very little beyond the fossa navicularis, ran a very mild course, and ceased under astringent injections in about ten days.

A second case was in a Mr. D., who came to me two years since complaining of a little boil on his penis. Examination disclosed a small purulent-looking collection between the folds of loose tissue, a little to the right of and behind the frenum. Both the surrounding inflammation and the swelling were very slight; there was but little accompanying tenderness; the deposit was covered only by transparent cutis. A slight touch with the bistoury caused it to discharge three or four drops of laudable pus. As there were no venereal an-

tecedents in the case, I remarked that it was probably a little sebaceous follicle which had become obstructed, and that he would have no further trouble from it. Several weeks after Mr. D. called to inform me that he was quite well of the boil, but that when he urinated the water came out of the side of his penis. On examination, I discovered a fine opening, like a pin-hole, at the bottom of a small, funnel-shaped depression on the site of the old difficulty. A fine silver-wire probe readily penetrated it, parallel with the urethral canal, for about half an inch. Failing to find my way into the urethra by this means, I introduced the blunted hypodermic syringe, and, on driving in the piston, the fistulous communication was demonstrated by free dripping of water from the meatus.

The foregoing cases, taken together, appear to me to warrant the inclusion of follicular sinuses among the possible causes of persistent urethral discharge; and, although I find no mention made of such complications in the literature of urethral disease, I venture the opinion that analogous cases have occurred in the experience of many practitioners.

CASE III.—Illustrative of the second variety, is a case of a young man, 23, who not long since came complaining of an unusual moisture of the body of the penis at the under surface, together with slight swelling, and redness. No especial pain had been complained of, but the constant sticky moisture annoyed him. His history was of repeated gonorrhœas of slight character which yielded to a few injections, but always left a slight gleety discharge. A year previous he had consulted a very well-known surgeon, who on examination found a hard bunch on the under surface of the penis just behind the frenum, and evidently involving the urethral tissues. After much consideration it was pronounced an initial lesion of syphilis, and a systematic mercurial course was prescribed. The treatment had been faithfully pursued for a full year, and was still kept up. No other evidences of syphilis had manifested themselves, and the induration had not appreciably lessened. Examination showed an erythematous spot, the size of

a quarter-dollar, on the integument of the penis inferiorly and about an inch behind the base of the glans. On palpation, superficial fluctuation was distinct, and a little pressure caused an oozing of pus from a central opening, not larger, apparently, than the point of a pin. Introducing an Anel's probe it passed directly forward, until it struck the bunch, which was a dense neoplasm about the size of a large pea. The origin of this was evidently a folliculitis, for pressure upon the superficial abscess caused slight oozing of pus from the meatus urinarius. What had caused the reopening of the sinus resulting in the suppuration in the tissues contiguous to the neoplasm was uncertain. It was very evident, however, that the diagnosis of syphilis was an error, and the mercurial was discontinued. The abscess was opened freely its whole length, and healing occurred without difficulty. The fistulous tract was finally closed by a 60 gr. sol. nit. argenti, introduced by means of a fine blunted hypodermic syringe.

CASE IV.—A merchant, aged thirty-five, was seen in consultation, in the third week of a sharp attack of gonorrhœa, associated with a very contracted meatus urinarius: a swelling, chiefly of the under surface of the penis, was discovered. Pain and difficulty of urination were very great; the œdema was very considerable; fluctuation was distinct. About an ounce of grumous, ill-smelling pus was evacuated by a free incision, and charcoal and iodoform poultices were alternated with soakings with very hot water. Notwithstanding this, the whole roof of the abscess sloughed out. There could be no question from history and behavior of this accident that the abscess was of urinary character, and caused by a leakage at a point which could not be discovered, but which in all probability was behind a stricture of large calibre at two and a half to three inches from the urethral orifice. No subsequent communication with the urethra could be made out, and the case went on to complete recovery without further difficulty.

In illustration of the latter, the third form of trouble resulting from urethral folliculitis, is the clinical history and treatment of a classical case which was made

the subject of a clinical lesson at Charity Hospital in 1879, a report of which was made by Dr. Brynberg Porter, as follows:

CASE V.—This is of a laborer, twenty-eight years of age. He was born in Ireland, but has been in this country for the last eighteen years. He is unmarried, a laborer by occupation, and was admitted to the hospital three days ago. His family history is moderately good. In 1863 he had an attack of typhoid fever, and in 1875, while at New Orleans, suffered from intermittent fever. In 1866 he had gonorrhœa; since then he has suffered from gleet. He has for a long time been a hard drinker, but has not taken much of late. About a month since he noticed a fresh discharge from the urethra, although he had had no recent venereal connection. He said, however, that just before this discharge made its appearance he had been drinking spirits, and beer, very freely, for several days in succession. The difficulty resembled an ordinary gonorrhœa, and he suffered a good deal from burning in passing his water, although he had no difficulty in urinating.

He further stated, that some six days since, on going to bed, he urinated without the least difficulty. After a comfortable night's rest he arose, and attempted to pass his water as usual, but found himself entirely unable to do so. During the day, suffering with pain and alarm, he called upon a surgeon, who readily inserted a catheter into his bladder and relieved him. This disability continuing, he was relieved in the same manner by catheterization, on the second and also on the third day, when he presented for admission into this hospital, complaining of pain in the perineum and inability to urinate.

He was found to have a distended bladder, the line of dullness extending fully two inches above the pubis. He was unable to void a drop of urine. An ordinary gum catheter was passed, without difficulty, by the house surgeon, and the bladder emptied of nearly two pints of urine. A distinct but diffuse swelling was found in the perineum, which was also the seat of some tenderness and pain, as complained of by the patient.

Since then he has been on his back, with warm poultices to his perinæum, and has had his urine drawn regularly twice a day.

This is the sixth day since the occurrence of his retention, and the third of his stay in the hospital. We now find him considerably below par in his general condition, and presenting pretty clear evidences of chronic alcoholism. His tongue is furred and tremulous; his skin is dry, dusky, almost jaundiced; his temperature somewhat elevated (101° Fahr.); his pulse is quick, not strong, and about 100.

The moderate febrile disturbance present is readily accounted for by the presence of the phlegmonous swelling in the perineum, previously referred to. This is seen to extend, from the attachment of the scrotum, to near the anus; fully an inch and a half in height, inflamed, tender to touch, hard and inelastic, yet not imparting to the fingers a sense of fluctuation at any point. The evidences are quite clear that an inflammation has been going on, in the tissues of the perineum, for several days, and that suppuration is imminent, or has already occurred, although not yet to the extent of presenting the physical signs, which we usually rely upon to determine the presence of a localized accumulation of pus, viz., fluctuation.

The depth and course of the tumor would indicate that the inflammatory process is here deeply seated, and is not a superficial phlegmon from general causes. There is no history of any local injury. The first intimation of trouble was *not pain*, such as initiates a simple cellulitis, but sudden and complete retention of urine. Then came a "feeling of fullness," as the patient describes it, which did not bring with it any sensation of pain, until the following day, and, even then, no external swelling was recognized.

If, you may ask, the evidences are here opposed to the idea of an idiopathic origin of the trouble, how shall we be able to explain the matter? The closure of the urethra, undoubtedly from a mechanical cause, was the first sign of trouble. This leads us to consider whether the cause might not have been in the urethra

itself. Impaction of a calculus, or the sudden swelling of mucous membrane from urethral irritation, may be suggested, but the easy passage of an ordinary catheter is opposed to this; and besides, the cause which closed the urethra continued to act, and was soon manifest as a progressive inflammation, involving, in a short time, all the perineal tissues. What, then, is the cause of this sudden local trouble and subsequent inflammation?

We are assisted in our answer by reference to the progress of events in similar cases. When allowed to take their own course, the result, almost invariably, is an acute abscess. This, when opened, discharges pus, more or less unhealthy in character, and presents evidences of admixture with urine, in greater or less quantity; and, at a period varying in different cases, from the date of the opening of the abscess (either spontaneously or by operation), up to two or three weeks, results in a urinary fistula.

A rupture of the urethral wall, has been followed by the leakage of urine into the surrounding cellular tissue. Sometimes this is so slight, that its only effect, is to set up a low grade of inflammation, which produces but a limited œdema. Again, in other cases, the urinary infiltration is sudden, and so extensive that nothing but the promptest surgical measures will save the patient from speedy death. The occurrence of a minute extravasation would explain satisfactorily the trouble in the present instance. But how are we to account for a perforation or rupture of the urethral walls in a case like the present, when the urethra is sufficiently free from stricture to permit the easy passage of an ordinary catheter? We are accustomed to associate urinary fistulæ with the results of external violence, or with the rupture of the urethra behind a close organic stricture, occasioned by pressure of urine from urgent action of the *detrusor urinæ* muscles. Evidently neither of these causes obtained in the present instance, and the perforation of the urethral walls can only be explained through the insidious progress of a sinus, originating in an antecedent folliculitis.

LESSON XLIII.

Post-mortem demonstrations of Dittel, showing evidence of follicular ulceration in proof of extravasation of urine occurring in consequence of folliculitis—His claim that shreds and rings of mucus in the urine shows predisposition to such accident—Author's explanation of the cause of such shreds and rings—Examination of clinical case with view of ascertaining the presence of strictures of large calibre—Follicular ulceration and perforation of urethral walls, resulting in urinary infiltration, supported by ample clinical proof—Case in illustration of the manner in which such accident is sometimes overlooked—Other cases in proof of frequent occurrence of same errors—Operation of external perineal urethrotomy.

Dittel, of Vienna, was the first to demonstrate, through *post-mortem* examination, that in certain cases, when death occurred from urinary extravasation, the opening in the urethra, by which the urine escaped, was *through a single small ulcerated follicle of the mucous membrane lining the urethra*. He showed that a simple folliculitis, might result in perforation of the urethral walls, and that follicular inflammation and ulceration, was an accident, very likely to occur upon a previously diseased condition of the urethra, such as is manifested by the presence of mucoid shreds in the urine. Dittel did not appreciate fully the significance of these shreds, which are washed out of the urethra in urination. He recognized the fact that these mucoid shreds, which he describes as “inspissated mucus, sometimes single, sometimes ring-shaped,” occur usually in persons previously the subject of gonorrhœa, and he claimed that they were evidences of a *diseased condition of the urethra, predisposing to follicular ulceration*. Since his recorded observations, however, it has been demonstrated, by means of the urethrometer and the bulbous sound, that these shreds of mucus are the accumulations, behind a *stricture*, which encroaches, often but slightly, upon the urethral calibre. It is readily seen, that such slight strictures as would permit the easy passage of a catheter might still be sufficient to catch the organic débris,

in the urine of a person suffering with lithiasis, and thus form a point of local irritation, finally involving one or more follicles in suppurative inflammation. Or even from the increased urinary friction, at a point made salient by slight stricture, a similar folliculitis might ensue, which, once initiated, should finally result in a perforation of the urethral walls.

Let us examine the urethra carefully in this case, with the view of ascertaining, whether or not, such a stricture is present. The easy passage of the catheter does not prove its absence. We must first ascertain the normal dimensions of the canal; then, and not until then, are we prepared to determine whether stricture is present or absent. The proportionate relation of the size of the penis to that of the urethra is ascertained to be as a rule about as $2\frac{3}{5}$ to 1. Here we find the penis measuring $3\frac{1}{2}$ inches in circumference. This multiplied by 25 reduces it to millimetres—in round numbers $87\frac{1}{2}$ —divided by $2\frac{3}{5}=34+$. The urethra would then be 34 m.m. in circumference. I will say, however, that this proportionate relation was discovered by frequent use of the urethrometer (which registers size in *millimetres*). A large urethra was observed to be associated with a large penis, *as a rule*, and *vice versa*. Measurements of the penis were made with the ordinary English tape-measure, and thus it was found that the penis of 3 inches circumference was associated with a urethra of 30 m.m. circumference; a $3\frac{1}{4}$ inches penis with a 32 m.m. urethra; a $3\frac{1}{2}$ penis with a 34 m.m. urethra; and so on, the urethra increasing 2 m.m. in circumference for every $\frac{1}{4}$ inch increase in the circumference of the penis. The attempt to reduce this comparison, of millimetres with inches, makes an ugly fraction, and I usually content myself with a formula, which resulted from the accident of having two sorts of measures in my clinical work. Here, then, we have a urethra of 34 m.m. The meatus, however, is found by examination with the bulbous sound to be only 22 +. For further exploration, the urethrometer will be required. This we introduce readily to the bulbo-membranous junction. It is easily expanded to 34 + without pain to the patient. On

drawing it forward for an inch, its progress is arrested, and it requires to be turned down to 24, before it can be moved. Examining the figures on the shaft of the urethrometer, this point is seen to be at 5 inches from the meatus. It is hugged closely for half an inch and is again free. I now turn the screw until the indicator marks 34 on the dial—when the patient begins to complain. At this size it comes forward easily to $\frac{1}{2}$ inch from the meatus, where its size requires reduction to 22 before it will emerge. If we now accept 34 as the normal calibre of the urethra in penile portion, we have here demonstrated, two prominent points of contraction or stricture; one at from $4\frac{1}{2}$ inches to 5 of a value of 10 m.m., and one at the orifice of a value of 12 m.m., the interval between these points registering 34. It is then very evident that two important strictured points are present—the one at the meatus, and the other at $4\frac{1}{2}$ to 5 inches. The deeper one, although permitting the easy passage of the largest instrument which can be passed through the meatus, is demonstrated to be a local point of obstruction exactly like that described by Dittel, and behind which shreds of mucus accumulate—are washed out in urination, and thus afford reliable diagnostic information of stricture; stricture which suggests the liability of follicular inflammation and ulceration, and a possibly resulting extravasation of urine. In whatever way we explain the cause or causes, which involve urethral follicles in ulcerative trouble, which sometimes goes on to perforation and urinary infiltration, we must accept the fact, as proven by *post-mortem* examination and ample clinical evidence.

Retention of urine, followed by perineal swelling and inflammation, independently of external violence, especially when occurring in conjunction with a urethra damaged by previous attacks of urethritis, points clearly to the occurrence of such an accident as the one alluded to, viz., follicular perforation of the urethral wall and extravasation of a greater or less amount of urine into the surrounding cellular tissue.

In the present instance, the conditions past and present, as ascertained by the history of the case and by

our examination, warrant the conclusion that this phlegmon is the result of a follicular ulceration of the urethra, through which, to a limited extent, urine has escaped. In this view of the matter, but one course is open to us, but one way is left by which we can arrest the difficulty and save the patient from the impending danger of an extensive and perhaps fatal extravasation of urine; and this is to incise the inflamed tissues freely down to and into the urethral canal.

The patient will now be etherized, preparatory to the performance of this operation, which is appropriately termed "*External Perineal Urethrotomy*." * In the meanwhile, I will endeavor still further to impress you with the importance and correctness of the proposed operation, in the present and in similar instances, by citing a case, published, some time since, in the hospital reports of one of the medical journals:

"A patient came in complaining of retention of urine. He was readily relieved by the catheter. He had a painful swelling in his perinæum, which was duly fomented for several days. The swelling increased; fluctuation was finally appreciated, but not thought to be sufficient to warrant incision, and it was determined to defer the procedure until the following day. During the night an extravasation of urine took place, extending into the cellular tissue of the scrotum, penis, and abdomen. On the occasion of the surgeon's visit the next morning, free incisions were made into the regions of extravasation, and every care taken to counteract the effect of the *accident* (?); but sloughing was extensive and the patient sank under its effects, and died a few days after." Such a swelling, associated with a *close urethral stricture*, would at once have suggested the probable nature of the trouble; but the easy passage of the catheter led to the fatal error of supposing that the phlegmon was not of urethral origin.

A series of cases was reported in the *London Medical Times and Gazette*, of January 4, 1873, where extravasation of urine and perineal fistulæ had occurred, in

* Gouley on "Diseases of the Urinary Organs" (Wood & Co.), p. 112.

which no stricture was found, No. 8 or No. 9 English catheter being readily passed in each case. The same verdict might have been rendered with equal propriety in the case before us, viz. :

In these cases we have seen retention of urine and perineal abscess, and no stricture found with No. 8 and No. 9 English catheter. But, on examination with efficient instruments, the urethra, in the case we have been considering, has been proven strictured to nearly one third of its normal caliber, at a point corresponding to the perineal swelling. With the same means of diagnosis here made use of, have you a doubt that stricture would also have been made out in the six cases above reported? I have not—nor have I a doubt but that extravasation would have been prevented in those cases by a *timely* external perineal urethrotomy such as we are now about to perform. Perineal swelling, without external injury, as a rule means urinary infiltration to a greater or less extent, and the only safe course is to make a prompt incision into it, and at least down to the urethra. Also examine for and locate, what you will be quite certain to find, namely, stricture of greater or less extent, at the urethral orifice, as well as at some deeper point, and remove these obstructions at the earliest available moment. If this is done promptly, it may not be necessary to incise the urethral walls. Pressure of the urine, during urination, at the point where the urethra has been perforated, is so much lightened by the removal of anterior obstructions that healing of the perforation may soon take place. The incision meanwhile, not only gives exit to accumulations of pus or other morbid fluids, but affords security against general urinary extravasation. If the strictures are not removed, however, and the excision has not been carried into the urethra, the probabilities are greatly in favor of a return of the trouble after the cavity of the abscess has been obliterated, and the external wound has healed. The operation will then require to be repeated, under additional and perhaps most serious disadvantages. An instructive case in point may be found on page 296 in my work on

"Urethral Stricture," published by Putnam's Sons. Several of Dittel's cases are also to be found in connection with the same.

Operative measures will be initiated here by dividing the meatus to the full size of the urethra, viz., 34+. This accomplished, I pass a large grooved sound readily into the bladder. The instrument is held, lightly but firmly, directly in the median line, as a guide to the urethra, when we approach it. Now the parts having been shaved, with this broad-pointed scalpel I make a deep incision into the tumor, exactly following the raphe, from a point at the junction of the scrotum with the perinæum, downward, to within an inch of the anus. This has divided the integument and superficial fascia and gone well into the swollen cellular tissue. Another incision in the same line carries us through the deep layer of the superficial fascia, and gives exit to a small quantity of pus and bloody serum which has been confined beneath it. Now, with my finger, I distinctly feel the sound in the urethra. We might have paused at this stage of the proceedings, having laid open the abscess and emptied it of its contents. But there was good reason to believe the origin of the trouble to be a perforation of the urethra, and that the cause of it, the stricture, previously demonstrated at five inches, still remained capable of continuing the mischief already commenced. I therefore carefully continued my incisions until the point of the scalpel entered the groove of the staff. This accomplished, the urethra was laid open for the space of half an inch, with the intention of giving free vent to urine during urination, and thus allow the perforation, through which the infiltration occurred, to close. This is doubtless so small that we are not likely to find it at present, and it may have been included in the incision, or be situated at a point close to the stricture. In either case, after the removal of the stricture, it will probably heal within a few days. Now introducing the 34 bulb into the incision, as I push it toward the meatus, it is arrested at about 1 inch. Introducing it at the meatus it passes readily to $4\frac{1}{2}$ inches. This space between $4\frac{1}{2}$ and an inch anterior

to the incision is the strictured point which is believed to have caused all the difficulty. I now introduce a narrow probe-pointed bistoury and divide the stricture on the superior wall of the canal completely, as shown by the easy passage of a full-sized bulb through the canal and out of the perineal opening.

Reëntering the canal through the incision, I pass the instrument readily back into the bladder, thus clearing up any suspicions of stricture in this locality. The after-treatment in this case will be very simple, and will consist in: first, raising and supporting the testicles by a broad band of adhesive plaster laid upon the upper surface of the thighs. This is placed so as to form a sort of shelf upon which the testicles may rest and the scrotal tissue be free from any danger of urinary infiltration. Secondly, in keeping the parts clean and well disinfected, by syringing the wound gently with a 1 to 60 solution of carbolic acid about three times a day. The introduction of a small soft-rubber catheter through the wound and into the bladder serves to draw off the urine without discomfort to the patient, and prevents its contact with the freshly wounded tissues. The catheter may be retained for the first 48 hours, or even four or five days, to advantage, and the urine directed into a suitable glass vessel—a female urinal for instance—which not only conveniently retains the urine, but allows the attendant to see at once whether the flow of urine continues, or if the tube is stopped; in the latter case the tube should be cleared at once and the bladder washed out with a little tepid water; after the removal of the tube or catheter the patient may void his urine, at will, upon a large sponge provided for the purpose, or into an ordinary bed-pan. A pledget of lint soaked in the carbolic solution and changed after each urination will be all the dressing required. In all operations on the deep urethra I am in the habit of following them by the introduction of a suppository, composed of 10 grains of quinine and $\frac{1}{4}$ grain of morphia, in order to counteract the nervous shock likely to be occasioned by the operation, also to prevent the accession of urethral fever.

LESSON XLIV.

Another case in illustration of follicular ulceration and urinary extravasation—Operation for relief in this case—Secondary hæmorrhage occurring—Mode of procedure in such accident—Extravasation of urine into the tissues of the groin and abdominal walls—Treatment of such accident—Manner in which extravasated urine finds its way into tissues at a distance from the point of urethral rupture—Anatomical relations of the deep and superficial faciæ explained as accounting for the direction an extravasation of urine may take—Another case in illustration of the accident of follicular ulceration and consequent urinary infiltration—Mode of treatment—Necessity of opening into the urethra in such cases—Another case in illustration of the various accidents which may result from urethral perforation through an antecedent folliculitis.

CASE VI.—*Illustrating the same form of trouble, and the treatment necessary in case of urinary extravasation.* The patient, a young Irish laborer of 27 years, presented himself with a well-marked swelling in the perineum, which had been coming on slowly for several days. It was painful on pressure. The tumor was quite hard and resilient, but no fluctuation could be discovered. The scrotum was quite œdematous, bright pink in color, and almost translucent. The coincidence of this condition with perineal swelling indicated to me that an extravasation of urine, from rupture of the urethra, was the most probable cause of the œdema. Recognizing that the probable cause of the trouble, was a follicular rupture of the urethra, with extravasation of urine, I advised immediate operation. This the patient would not consent to, although the danger of delay was pointed out to him, and he was urged, with an earnestness born of the consciousness of his peril, to embrace perhaps the only chance for life remaining to him. The chief of staff, also, deeply impressed with the certainty of a fatal result, if the extravasation was allowed to continue, pleaded with the patient and appealed to his common sense, and love of life, but in vain. I was obliged

to leave him in this dangerous condition, believing that the operation without the consent of the patient was not justifiable under the circumstances. I pointed out to him grave troubles that would probably ensue unless the bladder was kept empty, and introduced a soft catheter. The patient withdrew it, however, during the night, and the infiltration as a consequence had extended to the suprapubic and inguinal regions, and the swellings in the perineum, the scrotum and adjacent tissues were still more conspicuous, although no fluctuation could be made out. Consent to operation was now readily obtained.

The patient having been etherized, I introduced a steel sound into the urethra, freely opened the perineal swelling down to and into the urethra, with a bistoury, and made several incisions into the œdematous scrotum. The discharge of fetid pus and decomposed urine that followed, clearly showed the correctness of my diagnosis. I evacuated by pressure as far as was possible, the pus and serous fluid from the œdematous tissues, inserted a rubber catheter into the bladder through the perineal incision, to secure drainage, and maintained it there by securing it to a T bandage.

The hemorrhage during operation was slight and recovery from the immediate effects of operation and the anæsthetic, good.

I made no section of the suprapubic and inguinal tissues, hoping the extravasated urine in these parts would drain off through a rubber drainage tube inserted through one of the scrotal incisions.

I ordered nutritious diet for the patient, and he was committed to the care of the house staff, the house surgeon being instructed as to the accidents to be apprehended.

I saw the patient the following day; the scrotum had then greatly decreased in size and there was no destruction of integument. The inflammatory flush which had covered the right side of the abdomen and thigh passed slowly off.

On a day, nearly a week subsequent to opera-

tion, I was suddenly called to the hospital to see the case, which had developed secondary hemorrhage. This is one of the accidents to be apprehended in perineal section. By the time I reached him the patient had lost 15 or 20 ounces of blood, which was a great deal for a man in his condition. He was pale, with rapid pulse, and was being freely stimulated. Superficial plugging had been resorted to, and ice applied, but the blood continued to flow from the bladder and penis. The abdominal muscles were rigid as a board, from the intense straining of the patient to evacuate the bladder, which was filled with clots of blood.

I passed in a large catheter, to which I attached a syringe, withdrew the clotted blood and washed out the bladder. I then introduced through the wound and into the bladder a *canula-a-chemise*. This consists of a catheter over which a piece of linen cloth about ten inches square is passed, a hole being cut for this purpose just large enough to make the cloth fit the catheter snugly. The cloth is then tied on about an inch from the eye of the catheter and turned forward. We thus have made a sort of umbrella. It is not easy for the patient to have this introduced through the sensitive wound, and it is all important that it be made as smooth as possible. In this case it occurred to me to thoroughly smear the cloth with hard soap, until the shoulder at the junction of the cloth with the catheter should be effaced, having done this, on wetting it, it slipped into the bladder very readily.

Sometimes even this pressure will stop the bleeding; if not, open out the folds of the umbrella you have thus made, and pack it round the catheter with lint or cotton. By this means you are able to exert as much pressure as you require. On the following day I again saw the patient and found a swelling in the right inguinal region, with crepitus indicating decomposition of the tissue, the canula had stopped the exit of the pus, and pus and gas had distended the tissues. I therefore removed the canula, evacuated the fetid pus material, passed up my director and with a sharp-pointed bistoury made an incision two inches long. I washed out the wound

with a 1 to 100 solution of carbolic acid and inserted another drainage tube.

Now the question you would naturally ask is, How did the pus and urine get up into this region? I will try to make clear to you the relation of the parts and the situation of the fascia, and how infiltration may involve the penis without involving the scrotum, or the scrotum and not the penis, and how the urine works its way up in the pubic and inguinal regions.

The arrangement of the superficial and deep perineal faciæ is such as to separate completely from each other the parts anterior and posterior to the membranous urethra, or that portion of the canal included between the anterior and posterior layers of the triangular ligament. The anterior layer is continuous with the superficial fasciæ which, including the bulb of the urethra, extends forward on the penis, to its insertion in the glans, completely investing it in a membranous sheath, and separating the corpus spongiosum from the corpora cavernosa by a membranous septum, continuous with the superficial fascia, enveloping the body of the penis. Superiorly this fascia is attached to the symphysis pubis, and is lost in the aponeurosis of the suspensory ligament of the penis and in the surrounding cellular tissue. The posterior wall, or layer of the triangular ligament, is continuous with the prostato-peritoneal aponeurosis, which, joining the pelvic fascia extending forward to its attachment on the inferior surface of the pubis, thus encloses the lower part of the bladder and prostate. This enclosure has received the title of the superior or prostatic chamber. While those parts enclosed by the superficial fasciæ, extending forward from the anterior layer of the triangular ligament, and attached superiorly to the suspensory ligament and the tissues of the pubis, are known as the inferior penile chamber. It will thus be readily seen that extravasations of urine, occurring through rupture of the urethra anterior to the anterior wall of the triangular ligament, find easy access to the tissues of the penis, and may readily ascend through the interstices of the fascia at its pubic attachment to the groins and abdominal

walls, and also by the same route gain access to the cellular tissue of the scrotum. Accidents to the urethral walls behind the triangular ligament are exceedingly rare, and thus we seldom meet with urinary extravasation into the superior or prostatic chamber. When occurring, however, its localization will be understood by appreciating the fascial boundaries of this region; and the knowledge that through ulceration or rupture it may gain access to the cavity of the peritoneum will suggest early incision through the rectum.

The late Dr. Gurdon Buck was the first to discover and utilize the arrangement of the superficial perineal fasciæ, in explanation of the different accidents of urinary extravasation, and this fascia has hence received the title of Buck's fascia. A full and admirable account of it, with its practical relations to the subject we have here cursorily considered, will be found in the fourth edition of Bumstead and Taylor on Venereal Diseases, p. 253 *et seq.*, and also in an elaborate article on the same subject, by Dr. Robert F. Weir, in the *N. Y. Medical Record* of Nov. 15, 1879, p. 457 *et seq.*

Cases of perineal swelling may arise in this way: A certain amount of irritation is caused by stricture of the urethra; folliculitis results, and through the small opening thus made the urine gets into the tissues. For a while by natural processes the urine effused is absorbed, but finally the opening enlarges, and results in urinary abscess, and infiltration. . . .

Dittel's experience would point to the fact that many cases of perineal swelling, such as this, have a follicular origin.

When you meet with perineal swelling, do not wait for fluctuation: incise it at once.

Mr. Z., aged twenty-seven, a patient of the well-known and accomplished surgeon, the late Dr. Julius Thebaud, was seen by me in consultation in February, 1875, with the following history: Gonorrhœa twelve years previous, recurring gleet for four years, urethral stricture recognized, treatment by steel sounds, size No. 24, passed with some pain. This was repeated at intervals of several days for a month; dilatation not well borne,

pain and increase of discharge following. A few days previous some uneasiness in the perineum was complained of and a slight swelling was detected in that locality. Circumference of penis $3\frac{1}{2}$. Strictures defined, one at 2 and another at 3 inches, 24 F., one at 4 inches, 28 F. It was my opinion that a follicular ulceration had occurred behind the deepest and largest stricture (size 28 F.); that in this manner the urethral wall had been perforated; and that extravasation of a limited amount of urine had taken place (an accident similar to that described by Dittel in Pitha and Billroth's Handbook of General and Special Surgery, 3d volume, 2d division, 6th Book. In this case immediate external perineal section was imperative for security against possible sub-fascial extravasation. A general consultation was at once called, consisting of three more surgeons. After careful examination the presence of pus was considered probable, but doubts were expressed as to the origin of the abscess in the urethra. After a brief discussion it was decided to pursue a medium course by operating at once and thus avoiding the danger of a possible grave urinary infiltration, but to limit the incision to the peri-urethral tissues. The requisite operation was performed by Dr. Thebaud. A little bloody serum exuded from the engorged deep tissues, but no pus was found. The case went on for a week without much diminution of the swelling or of the aching in the testicles after urination, which had been a source of complaint previous to the operation. Another general consultation was called; consisting of the same gentlemen previously associated in the case. Before convening some 48 hours had elapsed, during which, without apparent cause, a favorable change had taken place; the swelling had begun to decline and the perineal wound presented a more healthy aspect. The improvement being fully recognized, it was deemed best to avoid interference. At the end of a fortnight the perineal opening had healed completely, when there was a sudden accession of discomfort and the swelling was found to have reappeared. The case was again seen by me in consultation with Dr. Thebaud and Dr. Rey.

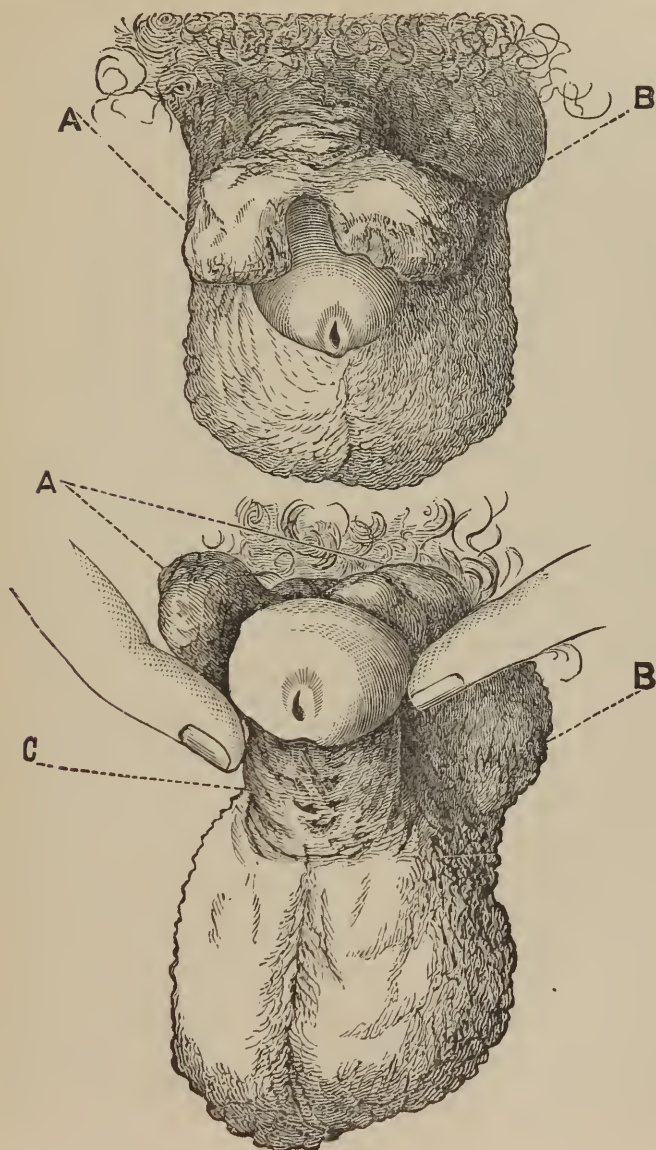
nolds (Dr. Thebaud's partner), some 48 hours after the discovery of the recurrent swelling. External perineal urethrotomy was again advised and promptly done by Dr. Thebaud, and the stricture at 4 inches (just anterior to the perineal incision) was divided with a blunt-pointed bistoury. An ounce or so of pus and grumous blood was evacuated. Immediate relief of pain succeeded and the wound healed kindly and perfectly. The aching in the testicles previously spoken of as occurring after urination did not entirely disappear. This was attributed to the presence of the anterior strictures at three and two inches from the meatus. These were thoroughly divided with the dilating urethrotome to 32 F., the previously ascertained normal calibre of the canal. A slight *spongio-corporitis* followed the operation, which delayed the progress of the case about a week; after which, recovery was steady and rapid, resulting in a complete cure of all trouble. A reëxamination three years after showed complete freedom from any trace of stricture. This case appears to me to demonstrate the occurrence of urinary infiltration behind a slight stricture, though in quantity so slight that a slowly forming abscess only resulted. The persistence of the trouble until the urethra was laid open, and the prompt recovery after that was effected, served to clear up any doubts that might had been entertained in regard to the urinary origin in trouble.

LESSON XLV.

FOLLICULAR SINUSES ASSOCIATED WITH URETHRAL CONTRACTIONS, AND REFLEX NEURALGIA.

Clinical case in illustration of the manner in which folliculitis may result in erratic sinuses extending to distant points, and which may be associated with varied reflex irritations and neuroses—Urethral contractions shown to be the original cause of the difficulty.—Prompt relief to all trouble resulting from division of strictures—Analysis of the case with illustrative diagram—Permanent cure proving the correctness of the position—Explanation of the probable mode in which reflex troubles are produced in such cases.

CASE VIII. X. Y., physician, aged fifty-seven years; has never had any form of venereal disease; no vicious habits from early childhood. Had a very redundant prepuce, which, from frequent attacks of balanitis, became more or less adherent to the glans penis. Up to the age of nineteen years could only uncover one-half the glans. By systematic effort, however, during a period of six months, the adhesions between the glans and the internal reflexion of the prepuce were completely broken up. He had no further trouble up to the age of twenty-two years, when he married. On first intercourse, the frenum (which was very long and attached at the inferior edge of the meatus) was ruptured, occasioning severe hæmorrhage, and a considerable degree of soreness for several days. He remembered no further annoyance up to the year 1857, when, at the age of fifty years, he had what was then supposed to have been an attack of "dumb ague" (irregular chills and fever), which in spite of the usual antiperiodic remedies, continued for a space of two months. To this a jaundice succeeded, and, at about the same time, the left side of the scrotum became swollen, red, and heavy; not sore to the touch, except on firm pressure. Heavy aching pain felt in the tumor at times, without apparent cause. No treatment resorted to except that of sup-

URINARY INFILTRATION FROM FOLLICULAR RUPTURE
RESULTING IN ERRATIC URINARY SINUSES.

A. STUMP OF CEDEMATOUS PREPUCE. *B.* URINARY ABSCESS.
C. URINARY FISTULA.

porting the mass with an ordinary suspensory bandage. This condition of things remained, without any marked change, for five and a half years, (in September, 1873, being in low condition from overwork) a small carbuncle made its appearance on his nose, and was soon followed by another, three inches in diameter, on the left side of the neck, which lasted, with much suffering and debilitation, for about three weeks. At this time a circumscribed cellulitis occurred at the most dependent portion of the swollen and indurated scrotum. After a few days' poulticing an opening occurred in the integument, which discharged pus, and was filled with shreds of disorganized tissue, similar in appearance to those which had characterized the *débris* of the antecedent carbuncles. For this reason, the scrotal lesion was considered by the patient and his attending surgeon, to be of a carbuncular nature; there was, however, but a single opening. Under simple treatment this supposed carbuncular abscess was discharged, fully, in about a week, and, by the close of the third day following, had filled and perfectly cicatrized. In about a week from this time, another circumscribed cellulitis appeared on the scrotum, about an inch above the first, passing through the same phases, and healing completely in about the same time. Another interval of a week, and a third abscess, precisely like the previous ones in accession and course, occupied the superior portion of the scrotum, after the complete healing of which the entire scrotum was left quite free from inflammation, induration, or any abnormal appearance. During the next week, another lesion, apparently of the same nature, occurred on the corresponding side of the penis, three quarters of an inch from the root, giving more pain than any of the previous abscesses. This, after opening, did not heal, but ran along under the integument of the dorsum anteriorly for about an inch, when it there "broke through and discharged carbuncular *débris*." The two openings were united by a division of the intervening integument, which was thin and red. The burrowing of pus continued along the dorsum penis to the fossa glandis, when the prepuce became com-

pletely phimosed. An opening into the preputial cavity in the vicinity of the fossa glandis soon occurred, and pus was freely discharged from the preputial orifice. In trying to wash out the prepuce with a syringe, it was found that the injected fluid traversed the entire length of the dorsum penis, and emerged at the first opening. A small collection of pus was found on the *right* side, which likewise opened into the preputial cavity. At this time the prepuce was very œdematous, and urination was difficult and painful; the pain extended beyond the penis, into the thighs, the calves of the legs, and even occupying the entire heels, not only when urination was attempted, but at night when the patient was endeavoring to sleep. Opiates were given, McMunn's elixir of opium or chlorodyne, but in small doses, from ten to thirty drops, two or three times during the night: larger doses were not well borne, aggravating the unrest. After some weeks, the doctor took a sea-voyage, hoping for benefit from change, as his general health had become greatly impaired. After being at sea for some twenty days, with no perceptible benefit, the swelling of the prepuce suddenly increased, and a purple spot appeared on the integument of the dorsum, just behind the glans. The tissues at this point soon gave way, exhaling a fetid odor, and an opening occurred about the size of a dime, which became permanent. The tension of the tissues was now somewhat relieved, but urination continued difficult, and the pains in the thighs, legs, and *heels*, which had hitherto been felt chiefly at night, now continued throughout the day. These were severe, almost beyond endurance, notwithstanding the use of opiates internally and various local appliances. Returning from the voyage after an absence of forty-four days (March, 1874), his surgeon divided the prepuce superiorly from border to base, the incision terminating at the gangrenous opening before mentioned. This gave great relief to the dysuria, and somewhat mitigated the pains in the thighs, etc., which were described as of a heavy, aching character, as from cramp, or excessive muscular tension. An aggravation of his trouble now occurred from the performance of

duties which devolved upon him (as the presiding officer of a State medical convention), which induced him to submit to further surgical procedure. A portion of the swollen prepuce was removed; as much as was thought essential to completely relieve constriction, and to get at the bottom of the sinuses, for treatment. The cut surfaces of the prepuce were left open and healed kindly, with the exception of a small opening under the base of the glans, through which, finally, a communication was established with the urethral canal. This fistula was followed, in the course of three or four days, by a second, from within outward, and alongside the first, on the opposite side of the median line. After the second opening was established there was some relief to the passage of urine, but none to the aching pain of the extremities. The supposed carbuncular troubles on the scrotum and on the penis were each preceded by a distinct circumscribed induration, involving the thickness of the integument and not movable over the cellular tissue. Similar indurations, smaller in size, now appeared on the undersurface of the penis, to the number of three, which each resulted in a urethral fistula, through which urine passed at every urination. These were about half an inch from the junction of the penis with the anterior of the scrotum, and just to the right of the median line. Nothing further was done in the way of surgical interference, and no improvement occurred either in the urinary difficulty or the penis or in the neuralgia of the inferior extremities. Consultations, with more than a dozen surgeons to whose notice the case was brought, failed to afford the patient any relief. Not one had ever seen anything like it. The general opinion was opposed to the idea of malignant trouble. The difficulty was considered of furuncular origin and to have arisen from poverty of the blood, dependent upon overwork. No treatment was advised, except that addressed to the general building up of the system. One surgeon advised amputation of the penis. The patient then decided to come to New York for relief, arriving on September 17, 1874, with letters to the principal surgeons of this city. He was seen by several, the late the dis-

tinguished Dr. William H. Van Buren, Prof. Thomas M. Markoe, and others. The opinions which an examination of his condition elicited were mainly in accord with those already mentioned, viz., a disease "resulting from poverty of the blood from malaria, etc., and excessive use of opium"—causing the neuralgic pains, etc., from which the patient continued to suffer night and day, and so severely and constantly that a complete demoralization of the patient was imminent.

Priapism added a new element of distress, and with only the hope of obtaining a possible relief from this new complication, by means of the *cold-water coil* which I had just then contrived, he was referred to me. An examination of the penis revealed the condition represented in the woodcut which precedes this lesson, executed from a drawing which I made, at the time of the patient's first visit to me. I found the glans exceedingly sensitive to touch. The patient was passing his water chiefly through a fistulous opening at the base of the glans, inferiorly. The meatus urinarius was contracted to 13 f. Bulbous sound 13 f. was passed with much pain, hugged closely for one inch until it emerged from the first fistulous opening. This opening was also terribly sensitive; an attempt to examine it causing a profuse perspiration and much complaint. It admitted with difficulty No. 26 f., and then passed down without force $2\frac{1}{4}$ inches, where it was arrested by a stricture. Bulb No. 23 f. passed through, and was felt to be free at $2\frac{3}{4}$ inches. My own view of the case, based upon the experience acquired from previously observed cases, where exactly the same character and locality of pain had been found to be dependent upon urethral contractions, determined me to advise complete division of all urethral contractions as the best and only means of relief. The propriety of this procedure was concurred in by Drs. Van Buren and Keyes. The doctor, after becoming fully cognizant of my views and reasons for operation, consented to submit himself wholly to whatever was deemed necessary to carry out the proposed operative procedure. The operation was set down for the following day, October 27, 1874. In consequence of previous engagements, Drs.

Van Buren and Keyes were unable to be present, but advised proceeding with the operation. By my invitation, Prof. Thos. M. Markoe and Dr. Geo. A. Peters were present. The patient was put under the influence of chloroform (which he had often taken for relief of his pains, and with perfect impunity) by my assistant, Dr. Fox; and I proceeded first to divide, fully and freely, the contraction from the meatus urinarius to the first fistulous opening, which was of calibre 13 f. This was done so that 31 f. bulbous sound could be easily passed. I then divided the orifice of the main fistulous opening, so that the same bulb could readily enter. An examination of the deeper urethra was now instituted, and it was found that a large-sized probe passed down for one and a half inch, and thence out of the urethra, to the right, until it entered, easily, the urinary abscess, situated at the root of the penis (marked in the cut), and which had existed for several months. (The patient complained that he always felt pain, on urinating, in this locality.) The stricture at $2\frac{1}{4}$ inches was then defined by 23; and by aid of my small urethrotome this stricture was dilated to 30 f., and divided; 31 solid-steel sound was then passed from the meatus, through the entire urethra, and into the bladder, without force. When the patient came out from the influence of the anæsthetic, he expressed himself as feeling better than for a long time. Bleeding was slight. The first attempt at urinating was painful, but urine was passed more freely than for years. Without opium or any other narcotic, he passed a comfortable night, sleeping for nine hours. On the following morning, he stated that he had entire freedom from all the pains so long endured, and that for a similar night's rest he "would be willing to submit to a similar operation every night of his life." There was no return of his pain in the thighs, legs, etc. After two days, I attempted to pass an instrument for the purpose of keeping open the divided strictures; but the pain was so great that I desisted, believing it better to wait until the sensitiveness had subsided, even at the risk of speedy contraction of the deeper stricture. In a week, the patient was out. Went to Brooklyn on a

visit. A pair of tight pantaloons, and an evening spent in playing billiards, caused some return of his nervous disturbance in the inferior extremities; but applications of warm cloths to the penis soon relieved him. I then proposed to examine the condition of the urethra, and found, as I had expected, a recontraction of the deeper stricture. On Sunday, November 8th, Drs. Peters, McBurney, and Fox present, I again divided the deep stricture under chloroform. From that time to the patient's departure to his home, December 1st, he had no further trouble. His recovery seems to have been complete. He left with the promise to communicate with me at once if he had any return of his trouble. Among the other results of the operation, the urinary abscess on the right side of the root of the penis disappeared entirely, and this within ten days after the first operation. The subsequent history of the nervous symptoms was one of continued improvement. Recontraction of the stricture at $2\frac{1}{4}$ inches occurred, requiring a second division, but the reflex symptoms did not return, and he had, when heard from in 1881, continued in good health.

My own view of the origin of the trouble in this case is that, from some unrecognized cause, a follicle in the scrotal portion of the urethra became the subject of inflammatory action; that this follicular inflammation finally resulted in ulceration and the formation of a fine and somewhat tortuous sinus, extending from the follicular point of exit in the urethra, down to the bottom of the scrotum; that the "dumb ague," which the patient complained of as occurring at about this time, was a *urethral fever*, and *marked the progress of the sinus*, which, after reaching the most depending portion of the scrotum, remained in great degree quiescent for five and a half years; that the depressed condition of health, resulting from general causes, finally brought about an active inflammation, terminating in an abscess at the bottom of the sinus; that when this urinary abscess, occurring at the bottom of the scrotum, supervened, the cellulitis accompanying it closed the sinuous tract for an inch, and, after the first abscess had

healed, a second cellulitis occurred at the point to which the sinus had been closed by the previous inflammation, and the second abscess resulted. The inflammation attendant upon this, closing the sinus for another inch or so, after a brief period the third abscess occurred. In the same time, and in the same manner, a fourth. Finally the integument of the body of the penis became involved in the ulcerative process, proceeding to the anterior portion of the organ. Inflammatory paraphimosis, and the consequent tension of all the tissues at this point, naturally gave rise to the urethral fistulæ which appeared in this vicinity.

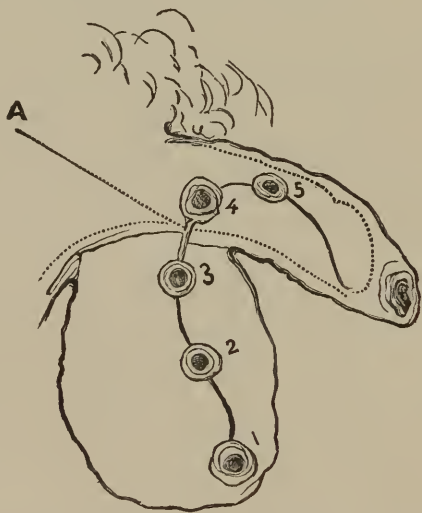


DIAGRAM SHOWING THE LOCALITY OF THE DEEP STRICTURE, COURSE OF THE URINARY SINUS, AND LOCALITY OF THE ABSCESES.

A, Deep stricture. 1, First abscess, connected with 2, 3, 4, and 5, the succeeding abscesses, by the sinus, which commenced at *A*, the point of stricture, and extended down to *1*, the bottom of the scrotum.

The reflex troubles in this case, appear to me, to be in exact accordance with those often found associated with urethral stricture, *especially at or near the meatus urinaris*. They are dependent, possibly, upon implica-

tion and irritation of nerve-fibres or corpuscles in the cicatricial tissue, or upon long-continued interference with the discharge of urine, in persons debilitated by influences calculated to depress the sympathetic nervous system.

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LESSON XLVI.

EPIDIDYMITIS.

Manner in which epididymitis occurs—Early symptoms—Anatomy of the testicle demonstrated—Symptoms of epididymitis—Causes of the same explained—Cases in illustration, showing the influence of the passage of urethral instruments in producing the accident—Introduction of bougies shown to be a frequent cause of epididymitis—Necessity of avoiding all introduction of catheters and bougies through the deep urethra except under urgent conditions—Course of an epididymitis—Treatment—Results of epididymitis—Dangers of permanent emasculation—Explanation of the manner in which this takes place—Diagnosis of such accident—Provisions of nature to obviate this danger—Symptoms of orchitis—Acute hydrocele complicating epididymitis—Symptoms—Treatment—Evidences of obstruction of the seminal canals—Manner in which this is produced—Treatment necessary.

One of the most important and interesting of all the complications of gonorrhœa is *Epididymitis*.

W. B., aged 24, tells us that he had a discharge from the urethra, coming two weeks after connection. The appearance of a gonorrhœal discharge, so long after exposure is unusual, but the length of this interval or so-called incubation depends a good deal upon personal idiosyncrasy. Sometimes the patient will feel an irritation almost immediately after contact, which will increase in severity, until within forty-eight hours there will be a discharge. This goes on increasing in quantity, the inflammation keeping pace with it, from ten to even fifteen or more days, until the active stage of the disease has passed. We can usually tell, within four or five days after an exposure, whether a man is going to have gonorrhœa or not, but sometimes the disease comes on very insidiously. If the man is not very observant the first thing he will notice will be yellowish spots on his shirt. How long they have been there he does not know. He has had no pain, no discomfort, but he happens to notice the discoloration on his shirt. The term *incubation*, is usually applied to the period between the

time of coition, and the discovery of the disease. This term is incorrect, for there is no true incubation in this disease. Inflammation is set up immediately on contact, and you might just as well talk about a fire in a coal pile having a period of incubation, corresponding to the time it was smouldering, before its discovery, as to talk of an *incubation* of gonorrhœa. The fire, when ignited, begins to burn at once; it has no period of incubation; nor has the gonorrhœa.

This patient says that the first thing which attracted his attention was a feeling of pain; then, when he examined the locality of it, he found a discharge from his urethra. Undoubtedly the discharge was there before he felt the pain. It continued. Four or five weeks subsequently, his testicle began to swell. Such is the common history of this complication. First, the gonorrhœal disease makes its appearance, goes on for several weeks; finally an *epididymitis* is developed. It is a very rare thing to find an epididymitis coming on sooner than it has done in this patient, unless the patient had had previous disease, which left his urethra in an unhealthy condition. The inflammation passes along the urethra slowly, until it reaches the vicinity of the seminal ducts, which, as you know, are situated within the prostatic urethra. In a very large proportion of cases the inflammation does not reach this point at all; the gonorrhœa is confined to the anterior portion of the canal. But in other cases, from various causes, usually from some excess, or from the use of instruments, injections, bougies, etc., mechanical irritation ensues, or contagious pus is carried down into the prostatic urethra, and an inflammation is set up at that point. Passing on, then, by continuity of mucous membrane, into the seminal ducts, and along the vas deferens, throughout its devious course, it finally reaches the epididymis.

The patient's attention will be called to this latter fact, by slight pain, probably first noticed on crossing his legs, or by some enlargement of the scrotum. This patient says he first felt pain in the lower part of his scrotum, and then it went around into his hips and back. Now this is not peculiar. The patient, you noticed,

pointed to the groin, saying he felt pain there. Then he swung his hand around to his back. There is a reason for this; it shows the course which the inflammation has taken in this case.

I will now draw a diagram of the testicle and its various divisions on the blackboard. Here we have the seminal lobules which are separated by fibrous septa. The seminal canals, which proceed from the lobules by reduplications from here, what are called the vasa recta, from their general straight arrangement; these run up and down as you see here in eight or nine reduplications, forming the head of the epididymis, what is called the *coni vasculosi*, from their conical form; and here, again, proceeding from these we have farther reduplications, forming the body of the epididymis, and the lower portion, called the tail; then we have this so-called *tail*, terminating in a single canal, which is called the *vas deferens*. Here we see a little vessel, the *vas aberrans*, coming off from it, which is noteworthy, as it sometimes produces an interesting complication called a spermatic cyst. At this point we have the serous covering of the testicle, *tunica vaginalis testis*. The vas deferens runs up along the cord in the inguinal canal, and that is the reason why complaint is made of pain in the groin, in commencing epididymitis. This patient put his hands to his groin when describing the seat of his pain, and spoke of a heavy bearing-down sensation accompanying the pain. This pain follows the line of the vas deferens, from its commencement in the prostate, along the base of the bladder, down through the inguinal canal, over the pubes, to the epididymis. Here the inflammation usually becomes lost in the reduplications of the epididymis, it being but rare that it involves the testis proper, producing what is called an orchitis. This patient's trouble is confined entirely to the epididymis; that alone is swollen; the testicle is not affected.

Now, we may have inflammation, commencing at the seminal ducts, following along the vas deferens for a limited distance and then subsiding before reaching the epididymis. I have had the opportunity of seeing a number of cases, in which the inflammation evidently extended

along the mucous membrane lining the vas deferens, a certain distance toward the epididymis, but eventually falling short of it. I recall a case in point, an instructive one, as illustrating not only inflammatory trouble confined to the vas deferens, but one of the common causes of epididymitis. A man came under my care many years ago with a stricture of the urethra, for the relief of which I treated him by the plan of gradual dilatation. After introducing a soft instrument regularly three times a week for several months the patient came on a day following the use of the bougie, complaining of pain in the perineum, which extended along up the back and along the loins. I sent him home and to bed, and gave him an opiate suppository to be introduced into the rectum. The trouble passed off in a day or two. On another occasion, also following the introduction of a bougie, pain occurred pursuing the same course but continuing down the groin, and caused a little aching in the corresponding testicle. Through use of measures used in the preceding attacks this passed off, and, not yet recognizing the cause of this pain (following a distinct course from the perineum around the bladder and finally extending to the testicle), the instrument was again passed, and this time the inflammation extended down to the epididymis, and the patient had a lively time of it with a swollen testicle for some weeks. Now, the cause of this inflammation, without a doubt, was the introduction of the soft catheter. This introduction of bougies into the urethra I wish you to note is one of the commonest causes of epididymitis. Epididymitis from this cause, I think, is quite as common as that resulting from the simple extension of the inflammation of a gonorrhœa. Within the last three months an old gentleman of my acquaintance, 70 years of age, obliged on account of an enlarged prostate to use a catheter every time he passes his urine, has had two severe attacks of epididymitis, brought on in this way. In this latter case, certainly there could be no suspicion of any other cause than the introduction of the catheter. The appreciation of such cases as this will make you hesitate to use instruments in the urethra when not

absolutely necessary. Still farther to impress this point upon your minds, I will cite another case recently under my care, where a man has had recurrent epididymitis six or seven times. The cause was supposed for a time to be the extension of a gleet with which he had been afflicted, but on inquiring carefully into the circumstances under which the epididymitis appeared, I found that every time he had an attack it was *immediately following the introduction of a bougie* which he was using by advice of his physician. Sometimes he would have an interval of freedom from epididymitis of perhaps one or two weeks, when, on introducing an instrument he would have within twenty-four or thirty-six hours an attack of epididymitis. When I pointed out the probable cause he at once recalled the fact that it did not occur except after the introduction of an instrument. Do not, then, forget that epididymitis may arise from the passage of instruments—bougies, sounds, or catheters—no matter how gently introduced through the prostatic portion of the urethra.

Do not fail to consider the danger of setting up an epididymitis when you are tempted to follow the senseless and dangerous custom of passing a bougie through the entire urethra, and into the bladder for the cure of gleet. If a patient with gleet is to be benefited by the passage of sounds or bougies, it is because he is the subject of *stricture*, and the benefit, when it is afforded in such cases, is through the dilatation of the stricture. This stricture may be, and most commonly is, situated in the anterior part of the urethra, not infrequently at the meatus urinarius alone. Why, then, insist upon passing an instrument into the bladder for relief of an obstruction in the anterior urethra? In all such cases, if you are wise, you will first ascertain the exact locality of the stricture and never pass an instrument to an unnecessary distance beyond it. The anterior urethra, viz., all the part in front of the bulbo-membranous junction, may be treated by dilatation or by division without the slightest danger of setting up an epididymitis. It is in the urethra *posterior* to the bulbo-membranous junction in which all the danger and damage from use

of instrumental measures arises. Not only resulting, in certain cases, in epididymitis, but not a few persons suffering only from anterior stricture *have lost their lives* from suppression of urine, caused by passing a soft bougie through the deep urethra, *for which there was not a shadow of necessity or justification.*

You will observe that the swelling in the present instance is entirely on one side. This is due to the fact that the testicles are entirely distinct organs. They are quite as independent of each other as are the eyes or hands, the reason for which is, that the power of propagation shall be made doubly sure. I will soon call your attention to further provisions in this same direction and speak of the dangers they are liable to from this inflammatory trouble.

In epididymitis the scrotum increases to the size of your closed hand or even larger. It is pyriform in shape, and becomes of a deep red color and exquisitely tender, and is not infrequently associated with a good deal of constitutional disturbance. Fever, nausea, general malaise are not unusual conditions during the acute attack of epididymitis from whatever cause it may be initiated; but of course we have every grade, from that which follows down the vas deferens only a little way, to that which extends through all the convolutions of the vas deferens, through the body of the epididymis and even into the seminal lobules themselves. It may stop at any point, but as a rule we have a more or less feverish condition in proportion to the amount of pain and suffering the patient undergoes. This may continue for eight or ten days and then decline. In this case the trouble has evidently been limited to a small portion of the epididymis. Oftentimes in gonorrhœal epididymitis the discharge disappears entirely until the inflammation of the epididymis passes over. It does not disappear permanently, as you might hope, but, on the contrary, as soon as the inflammation of the epididymis is over, the discharge comes back again to suggest to the unwary a repetition of the instrumental interference which may have originated the difficulty.

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With regard to the treatment of these cases of acute epididymitis, the first thing to do is to put the patient on his back. Put him in a condition to rest the inflamed organ, just as you would rest a lame arm or an inflamed finger. And even when he is lying down you should support the scrotum, and this is most cheaply and easily done by cutting off the heel of a stocking, making a hole in either side through which to pass a string and attach it to a band around the body, above the hips. This forms an excellent suspensory bandage and has the advantage also of being large enough to allow of applications to the scrotum. Poulitices are very excellent, or hot applications of any kind, all that has been said in favor of the application of ice to the testicle to the contrary notwithstanding. Hot applications in my experience have served a better purpose than anything else; and the hotter they are, and the more constantly they are applied, the better the results. You can get beneficial results also from the use of anodynes or narcotics. Strammonium, opium, tobacco, are all valuable, applied in poultices over the inflamed epididymis. I like tobacco better than almost anything else for this purpose. This may be used by taking a third of a ten cent package of chewing tobacco, and mix it up with a hot poultice of ground flax-seed of sufficient size to cover the scrotum completely. There is no better application according to my experience than this. And if the effect of the tobacco is, as is sometimes the case, to produce a little nausea, the beneficial effects upon the epididymitis will be enhanced by just so much. The old-fashioned treatment is not much in vogue now. It was rather disagreeable and heroic. It consisted in giving tartar emetic and Epsom salts in combination so as to produce a pretty free effect of both of these remedies; keeping the patient well nauseated and his bowels running off with watery discharges. This used to be considered the best mode of treatment. There can be no question about the value of depressants, even of nauseants, in this condition. I remember many years ago, when surgeon at sea, to have occasionally seen patients who came on

board ship with acute epididymitis. But I would then lose track of them for three or four days, and finally when again consulted would find them almost well. During this interval they had been suffering with seasickness. I have seen epididymitis improve rapidly under this treatment, if it may be so-called, thus proving the value of depressants, and nauseants in the management of this disease. It is quite possible that their use was originally suggested in this way.

Support is one of the best means of relief and cure. Support from the beginning to the end of the case. Support even before the beginning of the epididymitis, during the latter stages of gonorrhœa, when you may suspect that the inflammation is creeping back into the vicinity of the seminal ducts. By supporting the testicle at this time it may very quickly ward off an attack of epididymitis. Nothing is so conducive to the development of an epididymitis, under favoring conditions, as an unsupported, down-hanging testicle and a standing patient. Therefore you should always bear in mind during the later stages of a gonorrhœa the liability to this trouble, and the means of preventing it. Give support, then, before the epididymitis takes place, and after it has taken place, and during its entire continuance. Do not discontinue it until after all tenderness and swelling have disappeared. Now, that is all I have to say about the treatment of the acute stage of an epididymitis. This is not a serious condition so far as the pain and confinement are concerned. The general discomfort resulting from an attack of epididymitis does not amount to much, comparatively. It may keep a man suffering during a week or a fortnight; it may bother him for four or five weeks, or two months; but this is as nothing compared with the real injury which may be going on perhaps without our knowing anything about it, and that is, the stoppage of this little vas deferens which carries the seminal fluid from the testicle to the urethra. You can see how long it is, being convoluted upon itself, capable of being unravelled out for a considerable distance, many yards. A plug of inflammatory material may obstruct this at any point,

and if it does so it will just as thoroughly emasculate the man, for the time being, as if he had his testicle removed. Now a man who has an epididymitis, is very apt indeed to have some of this plastic material which has been thrown out during the course of the inflammation, remain in the head of the epididymis, plugging up the seminal canal at some part of its course. In a great many cases you will find a hard nodule just above and behind the testicle, and this means that the plastic material obstructs the epididymis at that point, so that the man is hermetically sealed so far as the use of that testicle is concerned. Then let the same accident occur to the other testicle and his case is a pitiable one, and yet that is the case of a great many men in the community. There are many men who have no children and wonder why, who, if they would recall their early experiences, would remember that they had at one time a swollen testicle, and again at another time another swollen testicle, and who might recognize in this fact an explanation of their sterility. Even years after, you might feel a knot of plastic material in the epididymis which has been the cause of the trouble.

Now, nature has made provision against accidents in a very simple way, by giving a man two testicles; and yet it is very evident that the inflammatory accident was not calculated on. Nature has been very liberal in her provisions for the insurance of the procreation of the species, and especially to preserve the virility of man. These provisions exist chiefly in the body of the testicle. Here you see the testicle is divided up into twelve or thirteen or more spaces or partitions, each one of which contains a seminal lobule; and each one of these is potent to secrete spermatozoa enough to beget as many children as it is ever necessary for one man to beget. An injury may interfere with the integrity of one or more of these lobules, and yet if one remains healthy the man is perfectly virile; perfectly able to beget children. The inflammation, as I have said before, rarely gets down into these lobules, but when it does, constituting a true orchitis, the pain is so much the greater that this pain sometimes announces

the fact at once. The difference between the pain of an acute epididymitis and that of an orchitis may be illustrated by the old comparison between gout and rheumatism. Some man who knew about it defined rheumatism in this way: if a man puts his thumb into a vice and turns it up until he can't possibly stand it any longer, that is rheumatism; then give it another turn or two and that is gout. So with the man who has epididymitis: he thinks he has all the suffering that he can stand; give him another turn or two and he has an idea of the pain of orchitis: that exceedingly unbearable inflammatory pain which is caused by the unyielding character of the envelope of the testicle, which is composed of white fibrous tissue and is known as the *tunica albuginea*. The epididymis lies in cellular tissue to which the inflammatory action is readily communicated, and thus there is no reason why it should not swell, and it does often swell very greatly without producing a great deal of discomfort. The swelling is not great in this patient: the scrotum is not tense; the tunica vaginalis is not prominent; but remember that this inflammation, instead of limiting itself to the cellular tissue, may pass through it to the tunica vaginalis, the serous membrane which supplies the sac with its lubricating material. This fluid increases very much in quantity in inflammation of this serous membrane; and the distended tunic presses upon the testicle to such a degree that very great pain often results, as well as considerable constitutional disturbance. You will find the parts tense and the man complaining of unbearable pain. When you put your finger on the tumor and find that it fluctuates you know at once what you have; you know that the inflammation has extended to the tunica vaginalis, which has given rise to an increase in the serous fluid which is producing the aggravation of the patient's troubles, and which can be removed with great advantage. In all these cases as soon as you get fluctuation you should put in the needle of your hypodermic syringe and draw out a drachm or two, or more of this fluid. It will usually be straw-colored, but if the inflammation run pretty high it may be somewhat pink-

ish in color. Drawing off this fluid relieves the pain at once. I have been called to cases where the pain was extreme; which could not be relieved by opiates, but which subsided immediately after withdrawal of a small quantity of serum by means of the hypodermic syringe. If you will remember to do just this little operation in accordance with the indications I have described, you will gain great credit, for it will give relief from the extreme pain as nothing else will do.

But we must never forget the grave accident previously mentioned, which is often associated with inflammation of the epididymis—this stopping up of the seminal canal at some point. Remember that when the inflammation has subsided, the surgeon's duty in the case is not ended. He must ascertain whether there is any hardness left at any point, and if so put the patient on a course of treatment just like that which we have recommended in cases of syphilis, and for the very same reason. We have, as I have often told you, a lot of foreign material, healthy enough; it does not necessarily produce any irritation, but it is foreign material, because it is not wanted. It is obstructive just as the same sort of material is obstructive in syphilitic trouble. We want to get rid of this, and the only way we can get rid of it is by fatty metamorphosis, and we want to use the remedy which is best calculated to effect this result. Now, hot fomentations may do it by increasing the excitement there, and giving the blood-vessels more calibre so as to enable them to carry away the material, but they will not do so much good after the active stage of the disease has passed away. This shows how important it is to have our treatment of the inflammation in the first place as complete as possible; and to neglect none of the means which will aid in reducing the inflammation, and in carrying away the products of inflammation. But there is something more potent than fomentations in carrying away the products of inflammatory action; and this is *mercury*. We apply the oleate of mercury locally on these indurations, and if we are wise we will give it internally until we find the material composing them under its influence melt-

ing away, and the vas deferens restored to its normal patency. This is a point of great importance, and it cannot be dwelt upon too strongly, or made too prominent in considering this subject.

LESSON XLVII.

PROSTATITIS.

Manner in which prostatitis results from gonorrhœal urethritis—Anatomy of the prostate gland—Acute inflammation of rare occurrence—Causes of—Early symptoms of the accident—Sometimes resulting in abscess—Indications of such result—Manner in which abscesses of the prostate terminate—In rare cases producing urinary extravasation—Time usually required for suppuration to occur—Diseases which may be mistaken for acute prostatitis—Method of correcting errors of diagnosis.

We have seen how gonorrhœal inflammation extends by continuity of surface along the lining mucous membrane of the urethra into its prostatic portion, and dipping into the seminal ducts, which open into the urethra at this point, reaches the vas deferens, and travelling along its walls, finally reaches the epididymis occasionally involving even the secreting structure of the testicle. This is one of the most frequent and painful of the complications of gonorrhœal urethritis. We have still another, which, though rarely, occasionally occurs, where the inflammation has reached the prostatic portion of the urethra. The seminal ducts, you will remember, open into the urethra on the inner sides of the sinus pocularis, which is situated on the inferior floor of the urethra, at about the middle of the prostatic portion. Along the outer sides of this sinus, open another series of ducts, ten to twenty in number, which communicate by a lining mucous membrane (continuous with the urethral) with the substance of the prostate gland which surrounds the urethra, and gives its name to this portion of its course. The structure of the prostate is mostly muscular tissue, arranged in circular bands, which surround the urethra, and whose action is involuntary. The glandular substance is arranged in pouch-like follicles opening into elongated canals which go to join the ducts previously described. Fortunately for subjects of inflammation of the prostatic portion of the urethra.

this gland is of low vitality, and is not readily involved in inflammatory action, so that acute inflammation of its substance is of rare occurrence: even though gonorrhœal inflammation invade the prostate urethra and linger there for weeks and even months, as it is sometimes known to do. Acute prostatitis occasionally occurs independently of urethral disease, and may be caused by violence done to the gland through urethral injections more or less irritant, through unskilled efforts to pass a sound or a catheter, or even in skilled hands, through the forcible distension of the prostatic urethra by means of sounds, bougies, or urethral instruments. Excitement from prolonged and frequent coitus, also excessive purgation, have been known to set up acute prostatitis. To large doses of copaiba and cubebæ, have been attributed the occurrence of this disease. But the excessive use of stimulants, venereal indulgence, exposure to hardships or sudden changes of temperature during the course of a gonorrhœa, may be considered as the most prominent causes of acute prostatitis. Onanism and congestion due to stricture are occasional causes, especially stricture, far back; also straining and dilatation of the canal by the urine. The early symptoms of this disease are pain and a sensation of heaviness in the perineum, frequent desire to micturate, pain on micturition, leaving a dull aching feeling for some time afterward. Pain in the perineum is deep-seated and is increased by the erect posture or by sudden jarring movements of the body; the pain often shoots up along the spermatic cords, and is often very severe in the lower part of the back. There is also pain on defecation, and especially after the disease has progressed somewhat. A frequent desire to defecate when no fecal matter is present in the rectum, and a constant sense of distension as from a foreign body in the gut. The cause of this will be explained by the introduction of your finger, well oiled, into the rectum. It at once impinges upon the swollen gland, which may have enlarged from its natural size (which is about that of a horse-chestnut) to twice or thrice that size, within forty-eight hours from the commencement of the attack.

Sometimes the enlargement is slower, however, though you may have nearly all the same symptoms present before much enlargement takes place. The feces, if the bowels were at all constipated would, theoretically, be flattened by encroachment of the enlarged gland upon the calibre of the rectum. Practically I have never verified this. As the disease progresses, you may have the difficulty in passing water increased so that urine is only voided drop by drop, and even complete retention may occur. The pain in the perineum, assuming a throbbing character, is an indication of threatened or commencing suppuration; then the occurrence of chills, showing that suppuration has occurred. Abscess forming, and finally opening either into the rectum, the urethra, the bladder, or by the side of the urethra through the perineum, or finally into the cavity of the peritoneum. It is said, that in some rare instances, the disease terminates in gangrene. The probabilities, however, are that the disease has in such case been complicated by extravasation of urine. Fortunately, however, the most frequent termination is in resolution, which, under proper treatment or favoring circumstances, may take place at any point in the course of the disease, before suppuration has become established. The usual time for the accession of the acute constitutional disturbance varies in different cases. In some there is much, in others it may even go on, without any very marked symptoms, to the formation of pus in from eight to twelve days. The only diseases you are at all liable to mistake for acute prostatitis are inflammation of the neck of the bladder, stone in the bladder. The constant or frequent desire to go to stool, the pain after micturition, as well as during the passage of water, the flattened form of the feces when solid, and lastly and correcting any error you can possibly have made, on introduction of the finger into the rectum, you demonstrate the enlarged and inflamed condition of the gland beyond the chance of a doubt.

LESSON XLVIII.

Acute prostatitis continued—Ordinary mode of examination of the rectum for diagnostic purposes not the most efficient or convenient—Author's method—Its advantages explained—Not only the prostate gland but the vesiculæ seminales and adjacent structures within easy reach of the finger—Condition of the prostate and vesiculæ seminales, and often of the bladder readily ascertained through examination by the rectum in the manner proposed—Specific medicines and injections to be discontinued on occurrence of acute prostatitis—Treatment of acute prostatitis—Retention of urine from prostatic enlargement—Catheters best adapted for the relief of this accident—Instructions in regard to their use—Abscess of prostate diagnosis and treatment of—Chronic prostatitis—Diagnosis—Treatment—Seminal weakness associated with chronic prostatitis—Masturbation usually the cause—Treatment of but little avail while this habit is continued.

THIS examination will be most conveniently and efficiently made, *not* in the ordinary way, by placing the patient on his back and inserting the finger between his thighs, but seated in a chair you direct him to stand squarely, his back presenting; have him drop his pantaloons and drawers, and, with his knees straight, bend forward at a right angle. The anal orifice is thus brought directly opposite and at a convenient height for the introduction of your finger. This well oiled is then passed in. If with some pain, direct him to strain slightly and thus loosen the sphincter. Your finger will then readily enter its whole length, and you will be able to sweep the rectum with it to the greatest advantage—reaching easily the prostate in its entire extent and also the vesiculæ seminales, and the adjacent structures of the pelvis. Pressure with the opposite hand above the pubis (especially in persons with thin abdominal walls) will give still further information in regard to the size and condition of the prostate, and to some extent of the bladder also. In quite a considerable proportion of cases you will recognize not only the exact size and condition of the prostate, but will be able to recognize changes in the size and form

of the vesiculæ seminales—to which the inflammation of the prostate not unfrequently extends.

Should the symptoms of this disease come on during an attack of gonorrhœa all specific treatment by medicines or injections, if in use, should at once be discontinued. In most cases the discharge ceases in a great degree if not entirely on the accession of inflammation in a neighboring organ; the urethra relieved apparently by the counter-irritation in its immediate vicinity. Whether the discharge ceases or not, we must now give our attention to the graver difficulty. If the symptoms come on with much suddenness and severity, free local blood-letting by leeches should at once be resorted to—ten or twelve and even twenty (if the patient be robust) Swedish leeches may be applied to the perineum, and followed by hot poultices or fomentations of Indian meal or cloths wrung out of hot water and covered with oiled silk. If the bowels are constipated a full dose of citrate of magnesia or Epsom salts should be given. The bowels should be kept soluble by saline aperients during the entire course of the attack, as the passage of hardened fæces not only gives intense suffering to the patient, but aggravates the inflammatory tendency. Full doses of morphia, say from a quarter to half a grain combined with the oleum theobroma—the cocoa butter—in the form of suppositories should be introduced into the rectum as often as once in 4 or 6 hours, or even less if necessary to quell the pain. You may also combine with this (or use in place of it, if from any idiosyncrasy of the patient opiates are not well borne) the extract of belladonna in quantity from $\frac{1}{4}$ to $\frac{1}{8}$ grain, until the specific effects of the drug are manifested. The acridity of the urine must be counteracted by the administration of alkalies—10 grains of bicarbonate of potash, in a couple of Brockedon's wafers, such as I exhibited to you some time since—or dissolved in mucilage three or four times a day. Flax-seed tea slightly acidulated with a little lemon juice is also beneficial as a drink. An occasional general bath of water not less than 100° Fahrenheit will give comfort and benefit your patient. Hot-water bags contrived for the purpose or

ordinary rubber bags are admirable for applying heat to that part. Sitz baths should be avoided. From the position they necessitate the blood gravitates to the inflamed parts, and pain is rather increased than relieved by them. I need not say to you that the recumbent posture must be rigidly maintained throughout the course of the disease. Should retention of urine occur, it will be necessary to introduce a catheter and draw it off. This is an operation of no little difficulty in some cases, and one which requires great care and knowledge of the nature and situation of the obstruction you will be likely to meet with. The swollen prostate pushes up against the neck of the bladder, forming a sort of valve which obstructs the passage of the urine, and interferes also with the passage of the instrument. A moderate sized silver catheter may be carefully introduced and passed gently down to the prostatic portion of the urethra, after the manner I explained to you some time since. Arrived at this point, press it gently and cautiously onward, until you meet with the valvular obstruction previously mentioned; then pulling the penis well forward depress the handle of the instrument very slowly and carefully, until it enters the bladder. You may find it necessary, and will certainly be aided in the operation by introducing the forefinger of your disengaged hand into the rectum, and with it guide the instrument into the bladder. A gum-elastic catheter, if at hand, is better—a conical bulbous one can often be made to enter the bladder without much difficulty, or the soft rubber catheter stiffened with a slight stylet or by my prostatic guide is best of all as a rule. The gum-elastic catheter with a short permanent elbow is recommended for cases where the third lobe is especially enlarged. Where the swelling of the gland is considerable it pushes the bladder upwards, elongating the neck, and requiring a much longer instrument to reach the interior of the bladder than that in use where no swelling is present: a long abruptly curved catheter named the prostatic catheter is used for this purpose. In using any instrument where prostatic obstruction exists, keep its point in contact with the upper surface

of the urethra, and it will usually guide you safely into the bladder. The upper portion of the canal being attached to bony and ligamentous structures, its course is with difficulty interfered with, while the inferior aspect is surrounded by yielding structures that easily allow irregularities and deflections of its walls to occur. When prostatitis goes on to the formation of pus as indicated by rigors, a throbbing sensation, etc., it is very desirable to ascertain as early as possible at what point in the gland suppuration has occurred. Abscess rarely occurs in the middle lobe; when occurring in the lateral, it is most likely to point into the urethra, and next most frequently into the rectum. In either case it is not necessary to interfere early, unless retention of urine demand it. Careful examination with the finger in the rectum may discover the presence of fluid in some portion of the tumor, or you may find obscure fluctuation in the perineum, showing a tendency of the abscess to point in this direction. An early incision with a long straight bistoury should be made in the tumor at this point in the median line, care being taken to avoid the bladder on the one hand and the rectum on the other. The sooner the pus is evacuated when the tumor points towards the perineum, the less trouble you will have; If left to itself, being pent in by the deep perineal fasciæ, extensive burrowing is likely to occur, and in this way pus may find its way into the cavity of the peritoneum, when a fatal peritonitis would in all probability ensue.

When the abscess points toward the urethra, it may be opened by the point of the catheter when endeavoring to evacuate the contents of the bladder in case of retention: the pus here escapes through the urethra, and the danger is that infiltration of urine will take place into the cavity of the abscess and the tissues adjacent. This can only be avoided by drawing off the patient's water through a catheter, until the abscess has filled up and healed. When the abscess points toward the rectum, it may be broken by the straining efforts at stool, or, if the fluctuation is well defined, it may with advantage be punctured with a curved trocar. No

after treatment is necessary. I now recall a case of this sort, where the abscess was ruptured at stool, and went on to a rapid and perfect recovery. Hourly doses $\frac{1}{10}$ gr. calx. sulphurata will limit and may prevent supuration.

More or less enlargement of the gland is left after an attack of acute inflammation. This is best treated by the use of the bromide of potassium in doses of from 10 to 15 grains three time a day in a little sweetened cinnamon water.

Rest on the back is the great necessity; milk or plain diet and diluents during an acute prostatitis.

There is another form of trouble of the prostate, termed by most writers on the subject chronic prostatitis, which I believe rarely goes on to formation of abscess, rarely or never involves the muscular or cellular tissues of the gland to any extent, but is confined almost entirely to the mucous lining of the ducts and the secreting follicles of the organ. (I can find no record of subacute inflammation terminating in abscess from this cause.) I believe it to be a purely catarrhal inflammation. It sometimes follows a gonorrhœa, but most frequently is caused by onanism or excessive coitus—generally by the former (onanism) alone. It is characterized by a tenderness on pressure over the gland, but produces but little if any perceptible enlargement. A turbid viscid secretion is poured out in greater or less quantity, and most during the act of defecation, and usually impresses the patient, and not unfrequently the attending physician, with the idea that it is a gleet discharge from the urethra, or a seminal discharge. Under the microscope it shows epithelial scales of the columnar variety with which the prostatic canals are lined, and the squamous variety which line the secreting follicles; these are mixed with mucous and perhaps an occasional globule of pus.

The somewhat sudden appearance of this fluid, so different in general appearance from the gleet discharge which may have preceded it, naturally attracts the attention of the patient, and its most salient characteristics suggest to his mind the probability of its semi-

nal character. Not unfrequently this idea is communicated to the medical attendant, who, if he is not familiar with this disease, and has not brought his microscope to bear on it, will be very likely to confirm the notion of the patient, and consider the case one of spermatorrhœa. The microscope alone can clear up the diagnosis. The scanty appearance of pus will shut out the idea of this increased discharge being due to the urethral trouble; the absence of spermatozoa will exclude the idea of spermatorrhœa, and the presence of the epithelial scales from the canals, and follicles of the prostate, will force the conclusion that the discharge is diagnostic of catarrhal inflammation of the prostate gland. Another point which is also of interest we have associated with it as a diagnostic mark also—the stream of urine less forcible than natural, and a dribbling at the termination of the urination, which would lead you to suspect stricture: but the passage of a full sized sound will clear up this source of error. The treatment of catarrhal inflammation of the prostate should begin by explaining the condition of things thoroughly to your patient, and put his mind at rest as to its true character. Remove as far as possible all circumstances which may tend to induce unnatural flow of blood to the part; avoidance of venereal act and thought should be insisted on. Advise him to sleep on a hard mattress and with light clothing and on his side. Cold bathing of the parts night and morning; to avoid eating at night, and be careful that his diet at all times is light and easily digested, and to keep the bowels in regular order by saline aperients—Kissingen and Congress waters or the effervescing citrate of magnesia. If this do not arrest the difficulty, counter-irritation to the perineum by means of tincture of iodine, or if necessary blistering ointment, is advised. All local applications are, however, only to be resorted to when other means have failed, as they make the patient very uncomfortable, and are, I believe, of uncertain value. Tannic, acid with cocoa butter (ten grains to the ounce), applied with Van Buren's cupped sound, nightly, is sometimes beneficial. I have in cases that have proved obstinate occasionally

used injections of solution of the nitrate of silver of a strength of from 20 to 30 grains to the ounce—using the long syringe loaded carefully with four or five drops only of the fluid, and repeating the operation when necessary about once in ten days, and never oftener than once a week. In hypochondriacs especially, *change of air and scene*. A case which was under my care some time since, which, though much relieved by the above method for a time, continued to suffer from this prostatic discharge, and also from much mental distress on account of it, as he intended marrying as soon as he could get rid of his discharge. I advised him to go abroad, and in every way possible endeavor to forget that he was not well—to cease all treatment and all examination of the parts, and not to come back under six months. After an absence in Europe of three months, he returned apparently well, married, and had no further return of the trouble.

Occasionally, or rather I should say usually, this disease is associated with nocturnal emissions of semen, more or less frequent. No treatment other than that above recommended is necessary on this account. It is well for you to assure your patient that one or two, or even twice that number of involuntary seminal emissions during the month are not inconsistent with perfect health. Sometimes after the discharge has disappeared it may be that the patient finds his erections are not perfect before the discharge of semen, and that during an orgasm the ejaculation is premature. This is the result of the relaxed and irritable condition of the mouths of the seminal ducts, and is a source of great trouble when not properly understood. Chronic prostatitis as a result of gonorrhœal inflammation is, as I have previously mentioned, usually associated with increased frequency of involuntary nocturnal emissions. This trouble commonly passes away with the disappearance of the prostatic discharge, but it sometimes occurs that an attack of gonorrhœal prostatitis is not only accompanied by increased nocturnal emissions, but that it is associated with or followed by a true seminal discharge occurring during defecation, or mingled with

the urine of the patient. In all such cases—and I have seen many—I am confident it will be found that the patients are or have been habitual masturbators, and that the disease has been ingrafted upon a diseased mucous membrane previously deteriorated by this practice. These are bad cases to manage, especially if, as sometimes occurs, the vicious practice is still kept up.

LESSON XLIX.

CYSTITIS.

Gonorrhœal cystitis rarely occurring before the third or fourth week of the disease—When occurring earlier usually the result of injections or instrumental interference—Other causes—Symptoms of cystitis—Treatment—Stricture of the urethra as a cause of cystitis—Clinical case in illustration—Prompt relief of threatened cystitis by division of stricture—Permanence of cure—Necessity of examination for stricture in cases of threatened or present cystitis—Importance of confining examination to the anterior or straight portion of the urethra—Exploration beyond the bulbous portion in such cases always perilous, and, as a rule, to be avoided.

An occasional complication of gonorrhœa, is the extension of the disease to the bladder. This rarely occurs before the third or fourth week, from gradual extension of the inflammation along the urethra. Its occurrence, however, is not infrequent through the use of injections.

Even the forcible injection of warm water has been known to engraft a cystitis upon a recent gonorrhœal inflammation. It is, however, in the later stages of a gonorrhœa, when the disease has crept back in a mild form into the deeper urethra, that from some especially provoking cause the inflammation is suddenly increased, and involves the mucous membrane of the vesical neck. The effort to drive injections back into the deeper urethra in the later stages of gonorrhœa, not unfrequently, results in their entrance into the prostatic urethra and the bladder, unless care is taken to prevent it. Hence the occasional occurrence of irritation causing frequent and painful urination in the later stages of gonorrhœa. Quite frequently indulgence in sexual contact, with or without connection, especially if combined with alcoholic excess, will cause a sudden aggravation of the urethral inflammation and its extension to the bladder. Passage of urethral instruments into the

bladder in examining for stricture, is a frequent cause of setting up inflammation of the vesical neck.

The symptoms are frequent urination and painful spasmodic contractions of the vesical sphincter. The amount of urine is small and at the close of the act of urination often mixed with blood. No sense of relief following. Great nervous irritability usually resulting; rarely any constitutional disturbance. Inflammatory disease occasionally extending beyond the vicinity of the vesical neck, may involve the entire mucous coat of the bladder, and even extend up the ureters and into the pelvis of the kidney.

Treatment requires absolute rest, in the first place. Suppositories of morphia, $\frac{1}{4}$ grain, every four or six hours, to quiet spasms and pain. Diuretics, demulcents, and diluents as in the acute stage of gonorrhœa, are serviceable. Infusion of the dried root of *Triticum Repens* or "dog grass," an ounce and a half to the pint of boiling water and adding to this a drachm of the bromide of potassium makes an excellent sedative and demulcent drink, the whole amount to be taken during each day as long as required. Any attempt to wash out the bladder would be sure to aggravate the disease during the acute stage and as long as pain is present. Injections of all sorts, medicated or otherwise, are contra-indicated. Warm water injections into the rectum are sometimes serviceable, adding a few drops of laudanum to each. When the acute stage has passed, and there is no longer any pain during or following micturition, and yet pus from the bladder is still found in the urine, occasional injections of the muriated tincture of iron, 20 drops to 4 ounces of water, at bed-time, are often serviceable. Gonorrhœal cystitis is occasionally caused by the added irritation caused by stricture at some point in the course of the urethra, and this, too, when the calibre of the urethra is only slightly reduced. The following case, illustrates the effect of this in producing a cystitis, and also the prompt benefit accruing from the removal of the stricture:

Mr. A. D., aged sixty-four, came under my care complaining of a slight urethral discharge and a sense of

irritation at the neck of the bladder. He had had no recent venereal contact, but had experienced several gonorrhœal attacks in early life. Examination showed a penis $3\frac{3}{4}$ inches in circumference, and a meatus urinarius of a capacity of 32 mm. Examination with the urethra-metre demonstrated a normal urethral calibre of 35 mm., and detected three narrow bands of strictures at between two and three and a half inches from the meatus, each of the value of 6 mm. I advised immediate division of these comparatively insignificant strictures, explaining and asserting my belief that the urethral discharge and the irritation referred to the neck of the bladder were a legitimate result of the holding and detention of gouty urine or its débris behind these barriers. Mr. D. declined any operative procedure with considerable warmth, and a palliative treatment (alkaline and diluent) addressed to his gouty diathesis was adopted. Improvement in the quality of the urine, which soon took place, caused a temporary relief from the irritation, and the discharge, which had never been profuse, gradually disappeared. The irritation returned, however, at the least indiscretion, and I was consulted about it every few weeks until February 2d, 1877, when he again presented, not only with return of the discharge and irritation at the neck of the bladder, but with pain in the glans penis and frequent painful urination. A small amount of pus was also found in the urine. Recognizing the fact that the urethral inflammation had extended to the bladder, I at once put Mr. D. to bed, and by posture, milk diet, local and general sedation, did what I could to afford relief. Notwithstanding this, a general cystitis supervened with great prostration, and came very near terminating his existence. He finally recovered (after some six weeks in bed), so that pus was no longer seen as a sediment in his urine, and urination occurred only once in six hours. Mr. D. was then sent to the seashore; there he improved in general condition up to June 2d, when he returned, complaining of a recurrence of old irritation and a gradually increasing frequency of micturition. This, as on former occasions, was preceded

by, and now associated with, a slight, painless, purulent discharge. I advised a prompt division of the strictures, claimed by me at the outset to be the cause of the urethral and vesical trouble, and now believed by me to be restoring the grave perils from which my patient had scarcely escaped. The gravity of any operative procedure in the face of threatened or advancing cystitis was fully appreciated. Professor Thos. M. Markoe (who previously had seen the patient with me during the height of the acute inflammation of the bladder) was called in consultation.

Notwithstanding the age of the patient (sixty-four), and his still somewhat feeble condition, resulting from previous disease, and the imminent threatening of another attack of acute cystitis, it appeared so evident that the return of trouble depended upon the presence of the strictures that an immediate operation was decided upon.

In the presence and with the fullest approval of Professor Markoe, I divided the meatus from 32 mm., so that a bulbous sound of 38 mm. was freely admitted. No. 36 was then passed easily down $2\frac{1}{2}$ inches, where it was arrested by the first stricture. The (my) dilating urethrotome was then introduced so that when dilated its blade would rise just behind the posterior of the three strictures previously measured and located between $2\frac{1}{2}$ and $3\frac{1}{2}$ inches. The instrument was then turned up to 38 and the strictures divided. No. 36 bulb was then passed easily through the entire canal to the bulbo-membranous junction, and, on withdrawal, demonstrated an entire freedom from Stricture. The urine was then drawn off with a soft catheter and six grains of quinine administered. The hæmorrhage following the operation was insignificant. A slight chill occurred about six hours afterwards, immediately following the act of urination; this apparently occasioned a rise in temperature of two degrees (101) for a few hours. Aside from this there was not the least constitutional disturbance and but slight pain on urination. Within twentyfour hours the intervals between the acts of urination had increased from two to three hours, and by the fourth day to six hours.

On the seventh day after the operation he was dressed and walking about, and claimed not to have been so wholly free from discomfort since his original irritation, more than a year previous. The intervals between acts of urination gradually increased. The urine became more and more free from pus without other treatment than that directed to general health, so that in a month he was apparently well in every respect; micturition once in five or six hours, and urine free from pus as a visible sediment. A few pus cells still found by microscopic examination.

October 7, 1877, Mr. D. called at my request for a re-examination of his urethra. The urethra-metre was introduced, closed, to the bulbo-membranous junction, turned up to 36 F., and by gentle traction drawn through the length of the pendulous urethra without meeting with the slightest resistance, thus demonstrating the complete absence of stricture, over three months from the date of operation, no instrument having been introduced in the interval. Recovery from the cystitis may be said to have been complete, although under the microscope a few pus cells were still found. There were also a few hyaline casts, but the case appears to me to prove fully the possible influence of strictures of large calibre in producing urethral inflammation, which, extending by continuity of surface, may produce a cystitis, and even a nephritis.

In the foregoing case I feel confident that an early division of the strictures would have cured the urethral inflammation by removing its cause, and that this would have prevented the cystitis in the first instance as surely as it subsequently did. The urethral discharge, which had been more or less profuse for the year previous, disappeared entirely a short time after the division of the strictures, and has not been seen since.

Up to April, 1883, this gentleman has remained well in every respect, not the least trace of pus or casts in the urine, and a critical examination of the urethra then gave not the slightest evidence of re-contraction at the site of former strictures.

LESSON L.

URETHRAL STRICTURE.

Urethral stricture a frequent complication of gonorrhœa—Description of the urethra—Its uses—Necessity for complete freedom from obstruction—Constrictions from various causes—Usually the result of previous inflammatory action—Manner in which stricture is formed—True stricture always surrounds the urethra—Spasmodic stricture—Distinction between organic and spasmodic stricture—Causes of organic stricture—Congenital narrowings—Usually at or near the urethral orifice—Measurement in one hundred cases of supposed normal urethræ—Highest type of urethral orifice that which corresponds in size with the urethra behind it—Reasons for this statement—Lithiasis a cause of urethral stricture—Reasons for this—Usual locality of such strictures—Clinical case in illustration—Sir Henry Thompson's views in confirmation of the capacity of vitiated urinary secretions to cause urethral stricture—Sir Benjamin Brodie's and Mr. Listers' views confirming the same.

In examination for stricture in cases of threatened or present cystitis, where stricture is a suspected cause of originating or aggravating the trouble, it should be borne in mind that such stricture if present is rarely beyond the bulbo-membranous junction and almost never beyond the membranous urethra, and also it should be understood that a contracted urethral orifice constitutes a stricture as potent for keeping up bladder troubles as when situated at a deeper point in the urethra. In all examinations entrance into the bladder or even beyond the bulbous urethra, as a rule, *should be avoided*.

One of the most common as well as the most important of all the complications of gonorrhœa is

STRICTURE OF THE URETHRA.

The urethra may be described as an appendage of the urinary bladder and of the vesiculæ seminales; its office, in connection with the vesiculæ seminales, being simply to convey the spermatic fluid, and, in its connection with the urinary bladder, to convey the urine from that reservoir to a proper and convenient distance. It is provided with no especial organic structure, except that which is required for the complete performance of

its office as a common carrier. To facilitate the passage of the urine, a propelling power of no insignificant character is furnished by the muscular strength of the bladder, aided by those of the abdominal parietes and the diaphragm. As the urinary fluid is an excretion, irritating in its nature, its immediate and complete discharge from the urethra becomes a necessity; hence this canal is furnished throughout its entire length with a resilient muscular surrounding, which, in its normal condition, effects this purpose with certainty and completeness. In order, therefore, that the fluids which find their exit from the body by the urethra, shall pass through it with the least possible friction, the chief mechanical necessity in its formation is complete freedom from obstruction. Any obstruction, therefore, from any cause—congenital or acquired—must, of necessity, be considered an interference, to a greater or a less degree, with the functional perfection of the genito-urinary apparatus. Constrictions of the urethral canal, from various causes, and at various points, are known to occur, and vary from slight interference with its muscular surroundings to virtual obliteration of the canal.

Congenital narrowings of the urethral orifice are perhaps as common as congenital phimosis; but this point is so much in the line of inflammatory action, from infantile balanitis and irritations from other causes, that it is quite impossible to draw the line, in any case, between the congenital and the acquired condition. Other than at this point, there is, I believe, no record of congenital urethral stricture. Strictures, at all other points, are recognized as of inflammatory origin. Any inflammation, set up by any cause, which dips below the mucous membrane lining the urethra, occasions, of necessity, an aggregation of plastic connective-tissue material, which, becoming organized in the submucous structure, is at once established as a point of obstruction in the normal urethral canal, and, when surrounding it (either by interference with the muscular resiliency of its walls, or by contraction of its lumen), this is elevated into the importance of a true urethral stricture.

Stricture tissue is simply cicatricial material, de-

posited in accordance with the accepted pathological law, that persistent irritation of living tissue results in the aggregation of germinal cells, and the development of connective tissue corpuscles, at the point of irritation. These, becoming organized in the submucous cellular tissue and the adjacent muscular structure of the corpus spongiosum, result in a more or less resilient band or bands, always completely surrounding the urethra. We have then always to deal with a resilient band, constricting the urethra more or less, at a given point or points. It may here be urged that stricture is not always a band surrounding the urethra, but that it may be on one or the other, above or below, according to many authorities. To this I answer, that a true stricture, always and of necessity completely surrounds the urethra. That it may have its origin, its commencement, at a single point in the circumference, is quite evident, but as soon as the calibre of the urethra becomes lessened at any point, the resistance to the flow of urine which it necessarily occasions, and the resulting interference with the harmonious muscular action, produces an irritation in its whole circumference at the point of contraction, resulting sooner or later in an aggregation of fibro-plastic material, not confined to a single point in its circumference, but around the entire canal. This fact renders it necessary for us, in all cases of strictured urethræ, to accept the difficulty as one of stricture, in its true sense, and not of obstruction at a single point. Aside from the evident probabilities in such cases, the fact that stricture of the urethra may always be released by division at any point in its circumference, would be greatly in favor of this proposition. Practically, then, we may accept the stricture as constricting the entire canal at some point. We have then a more or less dense, more or less extensive resilient band, or circle, of fibrous tissue, contracting the urethral calibre at one or more points.

This is known as *true organic* stricture, in order to distinguish it from so-called *spasmodic* stricture, which is always due to a more or less complete closure of the urethra at various points through a spasmodic contrac-

tion of the muscular surroundings of the canal, and is chiefly met with in the so-called muscular or membranous portion of the urethra, between the anterior and posterior layers or walls of the triangular ligament.

In order to make the distinction between the organic and the spasmodic varieties of urethral contraction more prominent, and to avoid even the possibility of confounding the spasmodic difficulty, either theoretically or in practice with true organic stricture, the term *urethrismus* has heretofore been employed by me during public discussions on its nature and importance, and now I believe pretty generally adopted by later writers.

STRICTURE, that is, always meaning *organic stricture*, is due to various causes:

1. Congenital narrowings (which are practically strictures, and which are found, in or near the urethral orifice).

2. Lithiasis.

3. Masturbation.

4. Traumatism.

5. Gonorrhœal inflammation.

1. In regard to congenital narrowings, these have heretofore been accepted as normal when they did not infringe upon the capacity of the orifice sufficiently to produce marked difficulty in urination. In the examination of one hundred living subjects with the urethra-

1	was	13 mm. cir.	3	were	25½ mm. cir.
3	were	15 "	4	"	26 "
1	was	16 "	5	"	27 "
2	were	17 "	3	"	27½ "
3	"	18 "	2	"	28 "
3	"	19 "	1	was	28½ "
1	was	19½ "	5	were	29 "
3	were	20 "	3	"	30 "
2	"	20½ "	3	"	31 "
2	"	21 "	5	"	32 "
5	"	22 "	4	"	33 "
3	"	22½ "	2	"	33½ "
1	was	23 "	3	"	34 "
1	"	23½ "	1	was	37½ "
7	were	24 "			
1	was	24½ "			
17	were	25 "			
			100		24.72

Average size in one hundred cases, 24.72.

In no case was the urethra, in the one hundred cases, below a calibre of 26 millimeters—ranging from this to 39—the average being 32.95. I think, then, that we are forced to conclude that the size of the *meatus urinarius externus* is not in any sense or degree a guide to the urethral calibre.

It is worthy of remark that, in the one hundred examinations referred to, notwithstanding the very great disproportion between the size of the meatus and the calibre of the spongy urethra, no marked trouble on that account was noted. These were, however, cases which claimed to be free from inflammatory antecedents. It is probably the fact that, as long as the meatus escapes inflammatory action, it does not become a source of trouble on account of its diminutive proportions. We may have a meatus from the size of a mere pin-hole to the full size which corresponds with the calibre of the urethra behind it. None can, perhaps, be claimed to be *abnormal*, as long as the functions of the part are well performed; and hence, in the presence of so great variations, it might be difficult to fix upon the *highest normal type* of the meatus urinarius. We find, however, that various and grave difficulties and diseases are occasionally associated with a genito-urinary apparatus, where the meatus is not of the full size of the canal behind it, and that such difficulties are promptly relieved by a surgical procedure which permanently enlarges the meatus to that size. The fact that such difficulties do not occur, when the meatus is of the full size of the canal immediately behind it, gives additional weight to the assumption. The condition, then, of these parts which insures the most complete functional integrity, and is least liable to become a source or seat of disease, and which is also least liable to induce, aggravate, or prolong disease in the contiguous parts, may, I think, be safely and appropriately accepted as representing the *highest normal type*. Now, by observation of the one hundred cases reported, the meatus will be found to correspond with the canal behind it, in *ten* cases,

while *not one* exceeds this limit. Besides this, it can be most positively proved that contracted meatus prolongs and intensifies gonorrhœa, produces gleet, and is the source of varied and grave reflex irritations.

We can, then, only accept the urethral orifice as absolutely free from contraction—practically *stricture*—when it completely corresponds and in size with the normal urethra behind it. The question of surgical interference must always be determined by the presenting difficulties, direct or reflex, which may, in the light of what is now known of the possible influence of such contractions, be reasonably attributed to it.

2. In regard to *lithiasis*, or the habitual tendency to the deposit of crystalline material of the urine at a higher temperature than that of the blood. The so-called “uric acid discrasia,” for instance, the habitual passage of uric acid crystals, commonly known as the “*red pepper sediment*,” or the “*brick-dust deposit*,” is well known to be frequently associated with an irritable urethra bleeding easily under the slightest examination, and presenting exceedingly sensitive points, especially when the urethra is naturally thrown into transverse folds, as at the peno-scrotal angle. It is also known that in a very great majority of persons two or three slight contractions of the urethra are present in the same locality, where there has been no acute inflammation caused to which such contractions may be attributed; and furthermore, it is a well recognized fact that on the accession of inflammatory urethra trouble from other causes, these points are usually the first to receive accessions of plastic material, which result in well-marked urethral stricture. In making my measurements of 100 cases of supposed normal urethral with the urethra-metre in 1875, it was found that in almost every instance there were 2, 3 and 4 distinct ridges at or near the peno-scrotal angle, *i.e.*, from one to two inches anterior to the junction of bulbous with the membranous urethra. These were at a point where the mucous

* See Otis on “Stricture of the Male Urethra : Its Radical Cure.” Putnam’s Sons, 2d ed., 1882, page 200, et seq.

membrane would naturally fall into transverse folds, in the pendant position of the penis. The occurrence of an erection during examination, in one instance confirmed this idea, inasmuch as the absence of the ridges was demonstrated with the urethra-metre at 36. But on subsequent examination of the same organ in flaccid condition with the urethra-meter, again at 36, three bands were distinctly recognized. These folds, then, would form inviting recesses for the lodgment of the solid constituents of the urine during an acid or an alkaline dyscrasia. Prolonged or repeated irritations from such cause would naturally produce thickenings in these folds, soon interfering with their resiliency, so that they could no longer be obliterated on the natural distensions of the canal; more or less obstruction to urination necessarily results; in other words, a point of irritation has been established, a urethral contraction commenced, which, although not perhaps sufficient to attract attention, *per se*, yet on the establishment of a gonorrhœa, would be quite sufficient to increase the virulence of the disease, and finally to keep up the urethral discharge indefinitely. In confirmation of this view of the formation of non-specific stricture at the peno-scrotal angle, I will cite the case of a lad of nineteen years, who gave positive assurance that he never had gonorrhœa. He was first conscious of urinary difficulty at the age of seven; but beyond frequency of micturition, did not remember any trouble until about three years since, when he began to suffer more or less pain during and after micturition, and which was referred solely to the body of the penis. He was presented at my college clinic. Examination resulted in the discovery of a vesical calculus measuring $1\frac{1}{4}$ inches in its long, $\frac{3}{4}$ of an inch in its short diameter. The lithotrite (No. 22 F.), in passing through the urethra, was slightly held at about three inches, and then slid easily into the bladder; the stone (uric acid), was readily seized and crushed. On withdrawing the instrument, a small quantity of the debris held between its jaws, resulted in a little greater distension of the urethra than in its entrance, and arriving at the point before mentioned,

and which had been the seat of the pain on urination, it was sharply and firmly arrested, and quite a little force was required for the extraction of the instrument. This stricture (which I demonstrated with the bulbous sound No. 26) must be admitted, as confirmatory of the occurrence of stricture without precedent gonorrhœa, and from the fact that he had stone in the bladder, the antecedent lithiasis, of several years' duration in connection with the arrangement of the urethral mucous membrane just alluded to, affords an apparently satisfactory explanation of the method by which the stricture was formed in this case, which may be accepted as typical of a large class.

Sir Henry Thompson, in his work on "Stricture of the Urethra" (second English edition, page 114), headed "*Causes of Urethritis and thus of Permanent Stricture*," says: "Urine may possess an irritating quality from the predominance of an acid or an alkali in it; a persistence of either of these conditions must be recognized as one of the undoubted causes of organic stricture. Thus," he says, "Sir Benjamin Brodie states that alkaline urine is more likely to produce the disease (stricture) than that which is acid, and that persons secreting the triple phosphate are almost sure to have stricture sooner or later." Mr. Liston says, in reference to attacks of acidity of urine, that "their continuance, or frequent occurrence, may lay the foundation of disease of the urethra." And further, Sir Henry Thompson says (*ibid.*, page 115), "Excesses of venery, protracted erections, and prolonged intercourse, are recognized causes of stricture." Lallemand, Ricord, Sir Everard Home, Acton, Gouley, Gross, and others, recognized *masturbation* as a cause of urethral stricture, and certainly if we can accept, with Sir Henry Thompson, excesses of venery, etc., we cannot deny this influence to masturbation. I have myself seen several aggravated and undoubted cases which fully support this view; and, again, Sir Henry Thompson (*ibid.*, page 117) says, "The influence of gout and rheumatism are undoubtedly causes of spasmodic stricture; these diatheses, therefore, predispose in this manner to the accession of organic stricture."

LESSON LI.

Masturbation as a cause of urethral stricture—The author's experience favoring the possibility of such cause—Professor S. W. Gross claims stricture as a frequent consequence of masturbation—Five clinical cases in illustration—Traumatism as a cause of urethral stricture—Accidental excision of the tissue of the urethral orifice in circumcision causing stricture—Clinical case in illustration—Venereal lesions at the urethral orifice a cause, also injuries from passage of urethral instruments—Blows on the perineum, from various causes, resulting in urethral stricture—Urethral stricture most frequently resulting from gonorrhœal inflammation—Necessity of appreciating pre-existing strictures—Gonorrhœa always aggravates and often calls attention to strictures previously formed—Symptoms and diagnosis of stricture following gonorrhœa.

3d. In regard to masturbation as a cause of urethral stricture: I have frequently met with cases of lads from 14 to 18 years of age in whom there was no evidence of lithiasis, nor any history of such difficulty, and where there had been no gonorrhœal trouble or any traumatic accidents, where well-marked strictures were present, constricting the urethra at various points from 10 to 20 millimetres circumference. In all such cases there was a history of excessive masturbation of from 2 to 5, or 6 years' duration. Prof. S. W. Gross of Philadelphia, one of the most accomplished and valued authorities in genito-urinary diseases, wrote me in February, 1876, the following histories of cases in which masturbation was claimed to be the sole cause of urethral stricture, adding the results of examinations in 85 cases of urethral stricture, comprising 147 strictures, showing the proportion in which the various causes of stricture were found to obtain.

NOTES OF FIVE CASES OF STRICTURE OF THE URETHRA
FROM MASTURBATION.

CASE I.—Wm. Sharkey, æt. 30, has suffered from the rational symptoms of stricture for four years. He is rather feeble-minded and has occasional attacks of epi

lepsy. The orifice of the urethra shows a calibre of 27 French gauge, but the penis is short and small. The exploratory bulbous bougie detected two strictures; the first being seated at $5\frac{3}{4}$ " from the meatus, and having a calibre of 18 (F. G.); and the second at 6", and of a calibre of 14. Urethra irritable.

On the 9th of September, 1874, at my clinic at the Philadelphia Hospital, I ruptured both strictures with Voilemier's divulsor up to 30—that being the normal gauge of the urethra. Conical steel bougies were afterwards passed at regular intervals; but he was transferred to the epileptic ward of the insane department on the 2d of October.

This man was a confirmed masturbator, and had been for years. He never had connection with a female. He continued the practice in the insane department, and when I examined his urethra, six months subsequently, contraction had taken place to such an extent that I could pass only a No. 14 bulbous explorer.

CASE II.—W. R., a private patient, aged 29 years, came under my care February 25, 1875, on account of a gleet discharge, diminution in the size of the stream of urine, retention of a few drops after the urethra was apparently emptied, and sexual hypochondriasis, which prevented him from having confidence in his virile powers. Exploration with the bulbous explorer detected a very irritable urethra, and a stricture $5\frac{3}{10}$ " from the meatus, of a calibre of 18. He had practised onanism from his sixteenth to his twenty-fifth year, but had lessened the frequency during the past four years. Up to June the 5th, I treated him with tonics, and, locally, with the steel bougie and astringent applications, but on account of his habits his visits were interrupted. At this time the sensibility of the urethra having almost entirely disappeared, I induced him to permit me to divide the stricture, he having strenuously opposed this remedy up to this date. I incised the coarctation with my urethrotome, and passed bougies up to No. 30. He had no chill, and remained in the house only thirty-eight hours. No. 30 was passed at regular intervals for three weeks, when I left town for the summer. I ex-

amined this man's urethra again, and for the last time on October 26th, when I found it to be perfectly free from obstruction. All his symptoms had disappeared, and he had intercourse without difficulty.

CASE III.—A medical student, æt. 24 years, consulted me on the 14th of May, 1875, on account of prostatorrhœa, irritable urethra, and stricture $5\frac{3}{4}$ " from meatus, of calibre of 17, and 1" long. His health was much broken, and he was in a state of constant mental worry from the idea that he suffered from spermatorrhœa. These symptoms were of two years' duration, and were due to masturbation, which he had only left off about twenty-six months previously. Having succeeded in subduing the irritability of the urethra by bougies, astringent applications, and our cauterization of the prostatic sinus, and general remedies, on June 16th I divided the stricture from behind forward, with my instrument, up to the full calibre of the canal, which was 30. He had no chill, and remained in bed 48 hours. He passed out of my sight in three weeks; but his sexual hypochondriasis was not improved.

CASE IV.—W. H., æt. 21 years, consulted me on the 16th of November, 1875, on account of what he supposed to be seminal losses, of three years' duration, the result of masturbation. He had never had sexual congress. He had the rational signs of stricture, and the exploratory bougie detected one $5\frac{1}{2}$ " from the meatus, of a calibre of 13. The meatus was red and pouting, and the entire canal was very sensitive. This patient consulted me only twice, and objected to operative treatment.

CASE V.—A druggist, aged 24 years, was brought to me on the 18th of February, 1876, on account of symptoms of vesical irritability, under which he had labored for six years. He had never had sexual intercourse, but had constantly masturbated from boyhood, until his twentieth year. The entire urethra and neck of the bladder were excessively sensitive, and a stricture of the calibre of 17 was detected $6\frac{2}{10}$ " from the meatus. Both epididymes, particularly the right, were enlarged and indurated. There was no history of venereal dis-

ease. This man had come north to lay in a supply of drugs, and I presume I will see him again before he returns to the west.

During the past 18 months I have kept a full history of the cases of stricture of the urethra that have fallen under my charge. They number 85, and represent 147 strictures.

Of their causation, 75, or 88.23 per cent were due to Gonorrhœa.					
5,	"	5.88	"	"	Masturbation.
3,	"	3.53	"	"	Lithiasis.
2,	"	2.35	"	"	Traumatism.

It is noteworthy that, in all the cases due to onanism, the urethra was unduly sensitive, and the stricture was seated in the curved portion of the urethra. Four were single, and one was double. While the proportion of gonorrhœal strictures is the usual one, those arising from onanism or lithic acid diathesis are beyond the average, and had gonorrhœa existed in these cases it would probably have been noted as the cause of the coarctation and the true antecedent trouble have been overlooked. In other words a stricture of the urethra of large calibre may exist without any very marked rational signs, and be due to inflammation provoked by other than specific causes. In such a case an attack of gonorrhœa will intensify the trouble, and might be assumed to be its existing cause. I have now in my ward at the Philadelphia Hospital a case of three tight strictures, attributed by the patient to an attack of gonorrhœa contracted five months before I examined him. If the clap be the true cause, I have only to say that it is the only case of the kind I have ever met with; as my experience goes to show that multiple and narrow strictures do not form in so short a space of time."

In regard to

TRAUMATISM AS A CAUSE OF URETHRAL STRICTURE.

It is not a very rare circumstance to meet with a contracted urethral orifice from cicatrization, resulting through the accidental excision of the end of the glans penis in the unskillful performance of the

Jewish rite of circumcision. I have seen several such cases, prolonging gonorrhœa, producing gleet, and also various reflex irritations. In one case within the past year, after a long siege, the gleet had apparently been cured by injections, and the patient had received permission to marry. The sexual excitement attendant upon the first week of marriage reproduced the discharge and a sharp gonorrhœa was communicated to the bride. Complete division of this stricture from 18 F. to 35 F. resulted in a cure which now, over 9 months, has continued, notwithstanding a rather excessive degree of sexual intercourse. Venereal lesions of the meatus—the initial lesion of syphilis—also chancroid—are a frequent source of stricture at this point. Injuries from the passage of urethral instruments and lithotrites are not uncommon, resulting in stricture of various parts of the urethral canal. Blows in the perineum falls astride fences, or their equivalent, violent contact with the pommel of a saddle, or through falls upon the wheel in carriage accidents, these are among the most frequent causes of traumatic stricture. From the nature of such injury the cicatricial deposit is much more extensive and dense than in strictures caused by inflammations initiated through the mucous membrane of the urethra, and consequently are less susceptible of permanent relief from any and all varieties of treatment.

In regard to

STRICTURES RESULTING FROM GONORRHŒAL INFLAMMATION.

These are apparently the most numerous of all varieties of urethral stricture. It is not usually borne sufficiently in mind that strictures may exist for a very long period without producing any symptoms which attract attention. Symptoms of strictures occurring at a shorter or longer period, after an attack of gonorrhœa, lead to an examination, and if stricture is discovered to be present the gonorrhœal accident is very likely to get the credit of it. The fact

is that a gonorrhœal inflammation usually causes immediate accessions of plastic material to previously strictured points, and thus calls attention to their presence and locality. It thus becomes quite impossible (with the knowledge of the various causes of stricture, independent of gonorrhœa) to form a just estimate of the number of cases of stricture due to gonorrhœa alone. All strictures appreciated as firm bands of contraction within a few weeks or months after an attack of gonorrhœa may be safely thrown out of the estimate and attributed to previous trouble of some one of the varieties previously mentioned as capable of causing stricture. The contracted urethral orifice seldom causes trouble until after the occurrence of a gonorrhœa which, adding to the obstruction by new accretions of plastic matter, thus, infiltrating the tissues at this point, and, while often apparently not greatly diminished in calibre, are greatly lessened in resiliency, and thus produce the effect of greater contraction.

SYMPTOMS AND DIAGNOSIS OF STRICTURE FOLLOWING GONORRHŒA.

"Gleet" is the signal which nature hangs out to notify the patient and his surgeon that the urethra is strictured at some point.

As the urine is propelled through the urethra, it impinges with more or less force upon any salient or contracted point. The column of fluid is arrested, and in proportion to the degree of arrest is the force of the blow upon the mucous surface at that point. Localized disturbances of the muscular action occur, preventing complete emptying of the urethra. More or less hyperæmia necessarily ensues, and a condition is soon established, well adapted to prolong an existing gonorrhœa, or which, upon slight additional cause, such as venereal excitement, or even an unusually acrid condition of the urine, may result in the origination of a mucopurulent, or a purulent secretion. We may hence affirm, as a most important axiom, *that the slightest encroachment upon the calibre of the urethral canal is suffi-*

cient to perpetuate a urethral discharge, or even, under favoring conditions, to establish it de novo without venereal contact.

It is in this way that gonorrhœas occurring a few hours after exposure are *generated*. It also explains the apparently unaccountable renewal of a urethral discharge after excitement, in individuals who have had no gonorrhœal disease for years.

And yet in some cases the urethra may be strictured at several points, and to a very considerable degree, without any perceptible purulent discharge. So that while gleet is an evidence of stricture, the absence of it does not prove that the urethra is free from important contractions. In other words, an amount of habitual friction of the mucous membrane of one urethra may be borne without marked irritation, which in another will soon set up inflammatory action.

Frequent urination, a twisted and irregular stream, a dribbling at the close of the act, are all evidences of stricture at one or more points, and yet all may be absent without proving the absence of stricture.

All may be present and due to other causes than stricture. Hence it becomes necessary to examine still further before a positive diagnosis can be made.

The first step toward determining positively the presence or absence of stricture in a given case is made by the actual measurement of the normal dimensions or calibre of the urethra. To obtain a convenient test-measure for reference the so-called urethral scale is used.

It is not necessary to enter into an elaborate argument, in order to prove that any and every subject which has an intrinsic value, should in publication be so treated as to render it intelligible in its essential points to scientific men in every part of the world.

Recent vigorous efforts have been made to bring about an adoption of the metric system of weights and measures by the medical profession of all countries. This suggests the practicability of a much-needed application of the same system to surgery, not alone to secure a more accurate measurement of anatomical proportions

and surgical instruments and appliances, but through this, as a common and simple medium, to facilitate the harmonious and intelligible interchange of scientific facts and observations. It is especially in the department of genito-urinary surgery that such a reform measure is needed, as here the most delicate appreciation of anatomical proportions and deviations, and hence the most delicate and accurate adaptation of instruments, is required. The want of some one exact and easily applied system of measurement of necessity depreciates, and often wholly negatives the scientific value of important observations. A rapid survey of this matter, as it affects genito-urinary questions, will serve to emphasize the foregoing statement.

The systems of measurements and estimates of urethral instruments and urethral calibre, in Great Britain, on the European continent, and in America, have always been, and still are, notoriously at variance. In England, such measurements are nominally governed by a fixed scale, but this is readily seen to be without any scientific basis. The normal calibre of the urethra has been estimated and a fixed standard assumed, unsupported by reason, anatomy or experience. Instruments for catheterism, or dilatation of stricture, or other procedures, have been graded by sizes from 1 to 12, while the normal calibre has been fixed at from 8 to 11 of this scale. The advance from the lowest to the highest numbers is by a conventional and irregular progression.

In the most recent work of Sir Henry Thompson, "Diseases of the Genito-Urinary Organs," London, 1876, that eminent English authority says, on page 54: "The ordinary range of our numbers is from 1 to 12. In England we cannot be said to have a uniform scale: one maker makes one scale and another another; and the Scotch scale differs by $1\frac{1}{2}$ from the English, so that the patient who takes No. 12 Scotch takes only $10\frac{1}{2}$ English." The English scale, accurately measured by millimetres in circumference, runs thus: 7 mm., 8 mm., 9 mm., 10 mm., 11 mm., 12 mm., 13 mm., 14 mm., 15 mm., 16 mm., 17 mm., 18 mm., 19 mm., 20 mm., 21 mm., 22 mm.

Hence Sir Henry Thompson advises the rejection of

this English scale altogether, and the adoption of the French scale, which he says begins at 1 millimetre in circumference and increases by 1 millimetre in circumference up to 30.*

In America, the imperfect English scale, introduced largely through the influence of Sir Henry Thompson's earlier writings ("Thompson on Stricture of the Urethra," London, 1853, etc.), came into general employment and is still much in use.

The first authority to protest against it was Dr. Bumstead, in his work on Venereal Diseases, 1861, who there adopted and recommended the French scale, and to facilitate its use among those accustomed to the English scale, had the approximate English numbers stamped on the reverse of the scale.

This was recommended under the impression, as also stated by Sir Henry Thompson, that the French *Charrière* filière scale increased in size by 1 millimetre circumference (Bumstead on Venereal Diseases, second edition, p. 267). Dr. Gouley, in his work on the "Genito-Urinary Organs," New York, 1873, p. 28, also protesting against the use of the English scale, presents a "metrical sound gauge" measuring by diameters instead of circumference. "This new gauge consists of 20 numbers, the smallest 1 millimetre and the largest $10\frac{1}{2}$ millimetres in diameter, with a difference between each two numbers of $\frac{1}{2}$ mm. instead of $\frac{1}{3}$ mm., as in the French scale. On one side of my gauge is stamped the diameter of each aperture in millimetres, and on the reverse side was from $\frac{1}{4}$ to 18, which very nearly correspond to the numbers of the English scale." The Gouley scale, as it came to be called, thus differed from the *Charrière* filière scale adopted and recommended by Dr. Bumstead, 1st, by computing sizes in diameters instead of circumference, 2d, by decreasing the number from 30 to 20; 3d, by carrying them to $10\frac{1}{2}$ mm. in diameter. This multiplied by $3\frac{1}{3}$ shows an increase in range over the *Charrière* filière scale from 30 to 34. Upon the handles of

* "Thompson on Diseases of the Urinary Organs," 1876, p. 54.

Dr. Gouley's sounds both the English number and the diameter were stamped.

In 1874 Drs. Van Buren and Keyes, in their work on the Genito-Urinary Diseases with Syphilis, erected and recommended still another gauge, which they called "the American scale." Rejecting the English scale on account of inaccuracy, and the French because they considered the increase of its sizes unnecessarily gradual, involving a necessity for too many instruments, "a needless expense with no compensating advantage." The so-called American scale, beginning with $\frac{1}{2}$ mm., increases in diameter by $\frac{1}{2}$ mm., like the Gouley scale, up to $10\frac{1}{2}$ mm., but making the sizes from 1 to 20. The numbers of these sizes are stamped under them, while over them is stamped the number of millimetres diameter. On the reverse the sizes are marked with numbers approximating the millimetres circumference of the French scale. For my own part I adopted the French metrical measurements at an early period. My first metallic bulbous sounds (made by Hernstein, 1861), were in 6 sizes, increasing by 2 millimetres in circumference from 18 to 30. By a gradually increasing appreciation of the necessity for more accurate measurement and a wider range, I had by 1870 increased the numbers to 26 mm. from 8 mm. to 34 mm., sizes graded by 1 mm. in circumference; and by 1874, to meet the requirements of practice, I was obliged to increase the numbers to 40. During the same year my urethra-metre was devised and presented to the profession. This instrument was so arranged that measurement of the urethral calibre could be accurately made, and by means of a screw at the handle, which governed the size of the dilating apparatus at the distal extremity, and also an indicator which moved on a dial at the handle of the instrument, thus registering accurately the *circumference* of the dilating apparatus, and also of the urethra when expanded to a size corresponding with its calibre (see p.). The adoption of measurement by circumference in this instrument was a necessity, if for no other reason because of lack of room to express fractions of diameter. It was also

adopted on account of supposed conformity with the Charrière filière scale. In an examination of the matter this was found by the late Dr. Bumstead to be an error, and shortly before his death my attention was called by him to the fact that *the Charrière filière scale increased in sizes by $\frac{1}{3}$ mm. in diameter.* So that while in supposed harmony with the standard French scale (then generally adopted all over Europe), the English and American measurements based upon it differed by $\frac{1}{3}$ mm. in every 1 mm. diameter. Dr. Bumstead, in his latest edition, formulated this error, showing that in practice it may become a matter of considerable practical importance, as will be seen by the following table:

No.	Diameter in Millimetres.	Circum- ference in Millimetres.	No.	Diameter in Millimetres.	Circum- ference in Millimetres.
1.....	0.33	1.03	21.....	7.00	21.99
2.....	0.67	2.09	22.....	7.33	23.04
3.....	1.00	3.14	23.....	7.67	24.08
4.....	1.33	4.19	24.....	8.00	25.13
5.....	1.67	5.44	25.....	8.33	26.18
6.....	2.00	6.28	26.....	8.67	27.23
7.....	2.33	7.33	27.....	9.00	28.27
8.....	2.67	8.38	28.....	9.33	29.32
9.....	3.00	9.42	29.....	9.67	30.37
10.....	3.33	10.47	30.....	10.00	31.42
11.....	3.67	11.52	31.....	10.33	32.46
12.....	4.00	12.57	32.....	10.67	33.51
13.....	4.33	13.61	33.....	11.00	34.56
14.....	4.67	14.66	34.....	11.33	35.60
15.....	5.00	15.71	35.....	11.67	36.65
16.....	5.33	16.76	36.....	12.00	37.70
17.....	5.67	17.80	37.....	12.33	38.75
18.....	6.00	18.85	38.....	12.67	39.79
19.....	6.33	19.90	39.....	13.00	40.84
20.....	6.67	20.94	40.....	13.33	41.89

Charrière filière: Diam., 1; Circum., 3.14159.

Fortunately the Scotch scale never emigrated to America, but without this we had practically five scales claiming to be authorities in estimating the urethral proportions: 1st, the old English scale, Thompson; 2d, the French Charrière filière, adopted by Bumstead with

English attachment; 3d, the Gouley scale, French diameters, with approximate English figures; 4th, the American scale with approximate French figures; 5th, the metric scale, increasing by 1 mm. in circumference and going 6 numbers higher than any other of absolute necessity, as I had demonstrated the frequent occurrence of urethræ the normal size of which was equal to 40, and even more.

It will be readily seen that great embarrassment in appreciating descriptions of cases, when urethral measurements are considered, must of necessity arise, unless the profession throughout the world will take the time to acquire a familiarity with some *one* reliable mode of urethral measurement.

Nothing is more common than for a surgeon to publish a case stating that he had dilated the urethra up to, say, No. 21, omitting to state whether it was 21 French, 21 English, 21 American, or Van Buren and Keyes, 21 Gouley, or 21 mm. in circumference, and most likely if inquired of would say that it was the number marked on his sound, and he did not *exactly* know to which scale it belonged. Even if he were able to say, various readers would fail to appreciate any scale they were not in the habit of using. I would, then, urge the adoption of a uniform urethral scale graded by millimetres in circumference, and for the following reasons:

1st. That the metric system in all other matters is being rapidly adopted by the medical profession, for the sake of accuracy and uniformity throughout the world.

2d. That it is already the standard in France, whose surgeons have done more to advance the science of urethral surgery than those of any other country, and that through their influence the continental surgeons have already adopted the metric system of urethral measurements *in circumference*. This system is in use by the best English surgeons and recommended by them, and it is also more generally adopted in America and in other parts of the world than any other.

3d. That it meets all the necessary requirements and may be used to express any and all urethral sizes without the possibility of any misunderstanding or uncer-

tainty. I would still further propose that all surgeons, as far as in them lies, should use their influence in *erasing* the numbers of all existing urethral instruments which are now marked with measurement figures other than those expressing measurements by millimetres in circumference, and having them *remarked* with the French figures *in circumference*. And finally, that all instruments hereafter ordered should be made and marked in conformity to the metric measurement by circumference. Dr. C. H. Thomas, of Philadelphia, in the *Philadelphia Medical Times*, June, 1879, in an article urging the necessity of a uniform scale of measurement for surgical instruments and apparatus, presented an ingenious contrivance of his own for ready and accurate measurement of instruments *by millimetres in circumference*. This is manufactured by Messrs. Gemrig & Sons, surgical instrument makers, No. 109 South Eighth Street, Philadelphia, who have generously offered to send this measureing scale gratuitously to any member of the medical profession desiring the same.

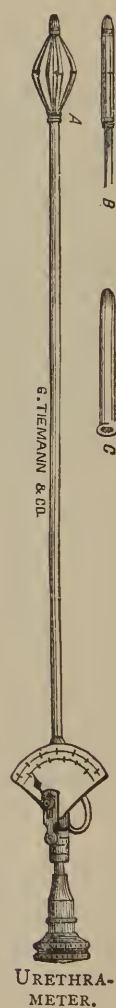
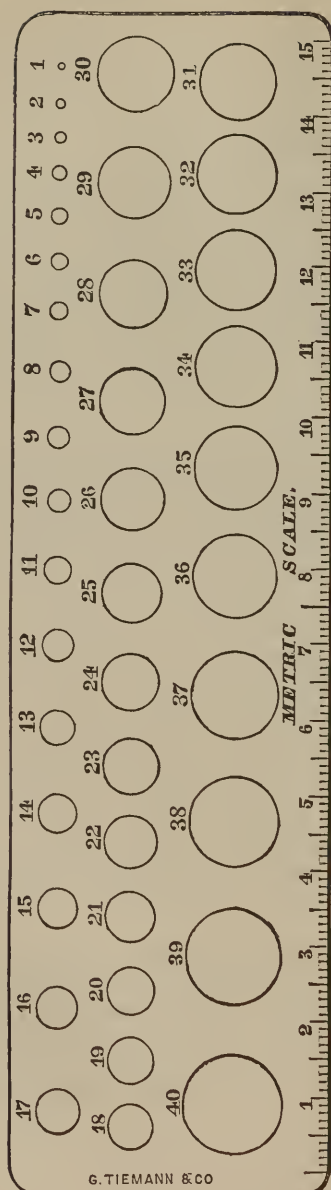
LESSON LII.

Urethral measurements—Necessity of the adoption of a uniform method—Note—Showing the want of some exact and common standard of measurement—Value of the urethrometre—Description of the instrument—Mode of using it—Proportionate relation between the size of the penis and the urethra—Table showing this relation—Verification of its correctness through actual measurements with the urethrometre of over one thousand cases—Difference in calibre between the bulbous urethra and the portion anterior—The bulbous sound—Usual locality of strictures—Stricture most frequent in the anterior portion of the canal—Statistics on this point—Solid steel sounds—Different varieties—Mode of introduction.

The Urethral Scale.—This is graduated by the French millimetre from 1 m. in circumference to 40. On the opposite side are the numbers of the English scale. "The scale for grading the sizes of instruments has never been very accurately fixed, except in France." * The French scale increases by one millimetre in circumference. This is a recognized standard scale in all countries at the present day, and the sizes of all other scales must be translated into this, in order to become intelligible in descriptions of cases. It is not rare to find urethræ with normal calibre of 40. The entire set, from 8 m. to 40, is absolutely essential to every surgeon who desires to make complete and accurate urethral measurements. The stricture which will permit say 25 of this scale to pass without obstruction, will often hold distinctly and firmly upon a bulb measuring 26 f. It is thus shown that the gradation of this scale is not too fine, and that no numbers can be dispensed with.

For actual urethral measurement we have *the Urethra-meter*.—With this instrument an accurate measurement of the normal urethral calibre may be made, in any case, within the compass of the instrument, the

* "Genito-urinary Diseases." Drs. Van Buren and Keyes, New York, 1875, p. III.



bulb of which can be made to expand from 20f. to 45f. The dial, near the handle, indicates in millimetres the exact amount of expansion of the bulb. Introducing it closed (and covered with the rubber cap, which serves to protect both the instrument and the urethra) down to the bulbo-membranous junction, by means of the screw at the handle, the bulb expands up to the point of the sensation of fullness felt by the patient. The hand on the dial will then point to the figure representing the normal calibre of the canal under examination. Strictures in the regions anterior to the bulb may also be accurately defined and measured by this instrument. When the bulb is suddenly arrested in withdrawal, the screw should be gradually turned until the bulb is permitted to pass. The position of the hand on the dial will then indicate the calibre of the stricture. It should, however, be borne in mind that when the urethra is very sensitive, spasmodic contraction may simulate an organic stricture. It is, therefore, necessary to verify the results of this examination with the bulbous sound before deciding that true stricture exists. If the latter instrument defines a contraction at the same point, by measurement, and, when passed beyond it, is distinctly held on return, the proof of organic stricture is complete. When the urethral contractions are below the calibre of the closed bulb, or when they are numerous and close together, the normal calibre of the canal may be assumed from the circumference of the flaccid penis. When the circumference is 3 inches the urethra has a normal calibre of at least 30 f; if $3\frac{1}{4}$ it will be 32 f; if $3\frac{1}{2}$ = 33 f; if $3\frac{3}{4}$ = 36; if 4 inches = 38; if $4\frac{1}{2}$ inches = 40, or more

CIRCUMFERENCE MIDWAY OF THE PENIS.

OF PENIS.		OF URETHRA.	
3 inches, or.....	75 mm.	30.....mm.,	or more.
$3\frac{1}{4}$ " ".....	81 mm.	32.....mm.,	" "
$3\frac{1}{2}$ " ".....	87 mm.	34.....mm.,	" "
$3\frac{3}{4}$ " ".....	93 mm.	36.....mm.,	" "
4 " ".....	100 mm.	38.....mm.,	" "
$4\frac{1}{4}$ to $4\frac{1}{2}$ ".....	105 to 112 mm.	40.....mm.,	" "

The correction of this proportionate relation has

been verified by the author's careful measurement in over one thousand consecutive cases, without meeting with a single exception, in infancy, childhood, adult life, or old age

In the measurements of one hundred cases of supposed normal urethræ, with the urethrometer, the measured difference between the bulbous urethra and the part anterior to it was—

In	35	cases	1	millimetre.
"	21	"	2	millimetres.
"	18	"	3	"
"	6	"	4	"
"	2	"	5	"
"	2	"	6	"
"	2	"	7	"
"	1	"	11	"
"	13	"		no difference.

The average difference in the one hundred cases was $2\frac{5}{100}$ millimetres, and the calibre of the ante-bulbous portion averaged 32.95.

It may therefore be made use of with confidence as a basis in procedures:

The Bulbous Sound.—This is intended solely for detecting the size, length, and locality of the urethral strictures. After ascertaining the normal calibre of the presenting urethra, a bulbous sound of corresponding size should be well oiled and presented at the meatus. If it passes in readily, this may be accepted as representing the normal calibre. If only a smaller size will enter, the difference between this size and that indicating the normal calibre will show the exact amount of contraction at this point. Figures on the handle indicate the exact size of the bulb; frequent verification by means of the scale will aid in preventing errors of measurement.

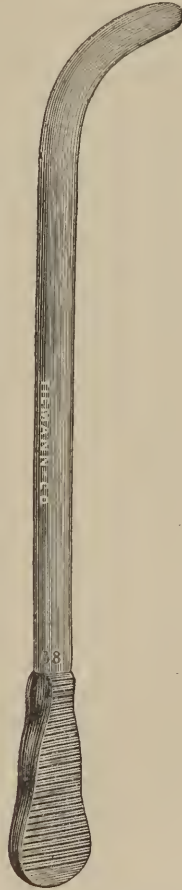
For convenience of description and study, strictures may be divided into two classes, viz., strictures of large calibre, and strictures of small calibre.

Those permitting the passage of the urethrometer with cover, say 18 to 20, and all above that size, are classed as strictures of large calibre; all those below that size are termed strictures of small calibre.

The usual locality of stricture: Out of 258 strictures, 52 were in the first quarter inch of the urethra; 63 in the following inch, viz., from $\frac{1}{4}$ to $1\frac{1}{4}$; 48 from $1\frac{1}{4}$ to $2\frac{1}{4}$;



FIG. 6.

FIG. 9. THE AUTHOR'S
SHORT-BEAKED SOUND.

48 from $2\frac{1}{4}$ to $3\frac{1}{4}$; 19 from $3\frac{1}{4}$ to $4\frac{1}{4}$; 14 from $4\frac{1}{4}$ to $5\frac{1}{4}$; 8 from $5\frac{1}{4}$ to $6\frac{1}{4}$; 6 from $6\frac{1}{4}$ to $7\frac{1}{4}$.

In another series of 357 strictures only 5 were deeper than 5 inches. (See Otis on Strictures, pages 97 and 317. Putnam's Sons, 1882.) In 446 strictures reported by Prof. Bevan, 89 per cent, or 399 strictures, were found anterior to $4\frac{1}{2}$ inches.

It was formerly claimed, that the great majority of urethral strictures is found in the vicinity of the bulbous-membranous junction, and various possible causes for their frequency in this locality were cited.

By the above statement it will be seen that they occur, as would naturally be expected, in greatest frequency where the inflammation begins the earliest, and rages the hottest, and gradually diminish in the deeper portions of the canal.

Solid steel sounds of various curves are habitually used for purposes of diagnosis preparatory to the more thorough examination by means of the bulbous sound and the urethrometer. For examining the deep urethra it is better than either, as any bulbous instrument is certain to be more or less firmly held on introduction and retained by the anterior and posterior borders of the triangular ligament. There are three varieties, known as the Thompson or Van Buren curve, the Beinike curve, and the short beaked sound, the latter of which I most frequently use and recommend.

Mode of Introduction.—Taking up the penis carefully so as partially to include the glans between the first two fingers and thumb, and taking up the sound lightly as you would a penholder; introduce it well oiled pretty much by its own weight, turning it slowly if any halting occurs, in this way releasing its point from any obstructive folds of mucous membrane or engagement in a false passage, or natural sulcus. The larger the instrument used the less liable to arrest from such causes. Always begin with the largest instrument which the meatus will permit. In cases of contracted orifice a division may be necessary before any satisfactory introduction can be effected.

As the sound is advanced gently draw up the penis on the sound, to meet it, keeping handle of the instrument well down as the abdomen is approached, thus

avoiding arrest by the anterior border of the triangular ligament; then carry the handle slowly and well back until the instrument, following the deep urethral curve, passes well into the bladder. In cases of doubt as to a cause of arrest in the deep urethra, promptly pass your forefinger into the rectum. The obstruction may arise from a muscular fold just within the vesical orifice called a bar of the neck of the bladder, or it may be from recent or chronic enlargement of the prostate gland. In either case the finger will discover it and aid in the passage of the instrument. If spasmodic stricture is suspected, gentle pressure with the end of the sound against the face of it and continued for 5 or 10 minutes will often overcome the spasm. The same measures may be used under profound anæsthesia. Even this will not always relax the spasm of certain forms of urethrismus. Therefore, while there is still a doubt from any cause the matter should be held in abeyance until further effort under more favorable conditions shall result in a solution of the difficulty.

LESSON LIH.

URETHROTOMY.

Operations for the relief of stricture only productive of temporary benefit before the introduction of dilating urethrotomy—Standard calibre for the urethra formerly accepted as a basis for operative measures—Error of this view—The author's dilating urethrotome—Description of the instrument—Mode of using—Complete division of stricture necessary to its permanent cure—This only to be expected by dilating urethrotomy—Early experiences with the dilating urethrotome—General summary of one thousand three hundred and thirty-one operations—Experience of Dr. Mastin, Professor Bevan, Professor Brown, Professor Pease, etc—Permanance of results—Clinical cases in illustration—Efficacy and safety of dilating urethrotomy demonstrated by the experience of various competent surgeons—Similar results within the reach of any intelligent and careful surgeon—The author's experience in nearly one thousand operations.

Operations for the relief of stricture of the male urethra by dilatation, divulsion or incision had been in use from time immemorial, but, according to the teachings of surgical authorities throughout the world, strictures were not absolutely cured by any one of these methods. All the numerous instruments and procedures which had been recommended and practiced for the treatment of urethral stricture were acknowledged to be inadequate to its radical cure; in other words, were unable to effect a removal of stricture so complete as no longer to require subsequent treatment by the occasional passage of bougies or sounds.

The operation of dilating urethrotomy, literally a dilatation of strictures up to the normal calibre of the urethra, and then thoroughly dividing—sundering—them at some one point, was first proposed by me some ten years since.

In order to effect these objects with any degree of certainty, it becomes necessary, in the first place, to ascertain with precision the exact normal calibre of the urethra in which the strictures are located.

At the time referred to a standard calibre for the human

male urethra was assumed by authorities, and accepted by the profession at large, as a basis for operative procedures. This had been fixed at 8 or 9 of the English scale (corresponding to lines in circumference), and 21 of the French (representing millimetres in circumference).

It was claimed that when a presenting urethra, the subject of stricture, was by any means brought up to 8 or 9 of the English scale (among surgeons who followed the teachings of the English school), or 21 of the French scale (for those who preferred the French authorities), the urethra could no longer be considered as strictured, and that further active treatment was unnecessary. The occasional use of sounds or bougies was, however, to be continued indefinitely.

My dilating urethrotome, first presented to the pro-

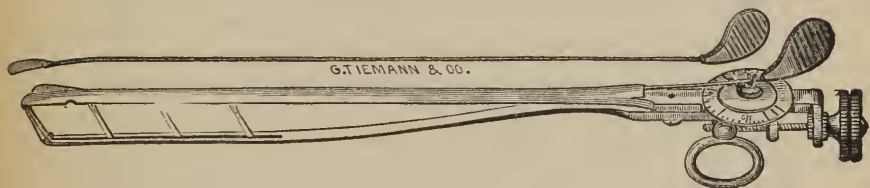


FIG. 10. THE AUTHOR'S DILATING URETHROTOME.

fession in 1871, was constructed for the complete division—the absolute sundering, of strictures, on a basis of exact knowledge of the normal calibre of the presenting urethra, and of the location and degree of stricture. This instrument consists of a pair of steel shafts (A and B) connected together with short pivotal bars, on the plan of the ordinary parallel ruler—as shown above in the expanded instrument.

Its expansion and contraction are effected by means of a screw which traverses the handle connected with the lower shaft, and is moved by the finger-button C. This screw acts against the upper bar of the instrument as a fixed point, and on being turned moves the lower bar, dilating or contracting the size of the instrument. To the screw is attached an indicator, which is thus made to traverse a dial placed upon the upper bar, which registers exactly in millimetres the degree of

separation of the bars, and thus the amount of dilatation which is being effected in any given case.

Up to this point the instrument is simply a dilator or a divulsor, and may be thus used by introducing it closed into the urethra until its distal extremity is beyond the ascertained point of stricture; then, turning the screw, the instrument is expanded, dilating the ure up to the previously-determined normal size of the urethra. The upper bar of the instrument is traversed by a steel wire, at the extremity of which is a thin blade, not exceeding two millimetres in breadth, and when in place is concealed in a deep slot at the end of the upper bar. Now, by means of its handle the urethrotome is drawn out of its concealment and made to traverse the stricture (firmly fixed and made thin by the previous dilatation), dividing it quickly and completely.

After an experience in over fifty operations, in 1873, I called public attention to the *results* of complete division of urethral stricture by dilating urethrotomy in six cases. A careful re-examination of these cases, three at one year from the date of operation, two at six months, and one at five months, showed entire freedom from stricture, although in the interval no instrument of any description had been passed through the urethra in either case.

The apparent radical cure of the strictures through complete division, and simple maintenance of the normal calibre of the urethra until the wounds of operation had healed, without subsequent passage of sounds or bougies, seemed to warrant the expectation of similar good results in other cases similarly treated. After an experience with this method of over twelve years, it may now, I think, be safely claimed that this expectation has been amply met by the results given to the profession during this period.

A general summary of 1331 operations made in accordance with the principles above enumerated, may be found recorded in my volume on stricture of the male urethra, published by Messrs. Putnam's Sons, New York, and by Smith, Elder & Co., of London, p. 279.

This covered my own experience in 635 operations;

that of Dr. C. H. Mastin, LL.D, of Mobile, Ala., 296; Dr. Thomas R. Brown, Professor of Surgery in the College of Physicians and Surgeons, Baltimore, 300; Dr. R. W. Pease, Professor of Surgery in the University of Syracuse, N. Y., 100; total, 1331.

Since that report Professor Bevan, of the College of Physicians and Surgeons in Baltimore, has reported 300 operations; Dr. Eldridge, Surgeon-in-Chief of the General Hospital at Yokohama, Japan, 100; Dr. J. L. Little, Professor of Clinical Surgery in the University of New York, 30; Dr. E. L. R. Thompson, of New Haven, Ct., 211; my own additional operations, 325; making a grand total of 2297 operations without a death or permanent disability of any sort. There have been *re-examinations* reported at various dates subsequent to operation, with the following results: Dr. Bevan, of Baltimore, out of his 200 tabulated cases, reports thirty re-examinations at periods varying from four and a half months to two years. Reconstrictions of stricture were found in but *two* cases.

Dr. Mastin, of Mobile, reports twelve re-examinations at from four months to two and a half years, with re-contraction in *three* cases. Professor Pease, of Syracuse, reports that out of his first series of forty-five cases (operated on from 1875 to 1877) in twenty-one re-examinations at dates between four months and two years—thirteen of which were over one year—no reconstrictions had taken place (see Otis on Stricture, p. 262).

Of his subsequent experience in 296 operations under date of July 21st, 1881, he writes as follows: "The whole number of cases in my private practice of which I have a record, not published, is 273, comprising 395 strictures. Of this number forty-seven were deep, or between six and a quarter and seven and a quarter inches. Out of this series of 273 cases eighty have been re-examined at from six months to four years from the date of operation. Out of this number of re-examinations fifty-nine gave perfect results, twenty cases had recontraction in one or more strictures, upon twelve of whom re-operations were made, and subsequently dis-

missed cured; two have drifted away, and six are awaiting a favorable time for re-operation. Urethral fever followed in nine cases, in three very severe. All recovered, however, with no bad results. In three of the deep operations severe hæmorrhage followed, controlled by the perineal crutch. In fourteen cases there was curvature of the penis, lasting from one to fifteen months.

Dr. Mastin, in answer to my request for his latest experience to be incorporated in a paper before the Surgical Section of the International Medical Congress held in London, August, 1881, writes under date of July 21st, 1881:

"I have thought it would serve at this very late date if I would drop you a line, and in it permit you to use my *unqualified approval* of your method of the radical cure of stricture. It would be useless for me to add new cases in which I have done the operation, because it is not increased numbers, but rather a few cases, of *long duration* which go to prove the value of the method. Five hundred cases done in the past six months, would prove less than five cases done six years ago. It is the *permanency* of the cure, and not the number of operations done which will go to prove the radical results. To this end I have thought it best to take up the list of thirty cases, already published in the first edition of your work on stricture (see page 248 et seq.), and give you the result of recent examinations.

CASE I.—Operated upon by dilating urethrotomy in December, 1874, six years and six months ago. This case has been under constant observation, and after repeated examinations I have been unable to find the least recontraction. He has married since the operation, and has had no trouble whatever with his genito-urinary functions. He *has not* used a sound to keep patent his canal, and I find his urethra up to its normal calibre. I consider his cure perfect and believe that six years is fully long enough to show whether a return is liable. He has been engaged all the time at hard work, being an engraver and machinist.

CASE II.—Operated upon in February, 1875. This

man passes my office four or five times every day, and, as a consequence, I have had ample opportunity to have him under close and continued observation. Repeated examinations in the past six years have shown there has been no recontraction; and on more than one occasion I have put a No. 40 m.f. sound easily into the bladder. It will be remembered that I cut him to 38 m.f., but afterwards I carried the sound up to 40 m.f., and find that they can be passed without force to that size now.

The prostatic irritation which remained for some months after the operation has gradually subsided, and at this date he enjoys perfect health. Being unmarried he has led a life of some irregularity, but fortunately has not contracted a discharge, nor has he been intemperate in drinking.

CASE III.—Operated upon in September, 1875, 35 m.f., near six years ago. Two months ago he had no recontraction and remains perfectly well. Neither of these cases have used a sound to keep the urethra open; nor have they complained of any urethral trouble.

CASE IV. Has died from heart trouble, but from the date of operation in November, 1875, to 1878, he had no return, and examination showed an urethra without any lessening of calibre.

CASE V.—Was not considered a fully tested case, and doubt was expressed as to whether the operation would prove a success as the urethra was not opened to its normal calibre, and a considerable amount of discharge kept up. The operation was done in December, 1870. In the fall of 1880 he still had a degree of urethral irritation and occasionally some discharge, but the patency of canal remains up to 31 m.f. Although I do not consider this case cured of his stricture, still I do consider that his contraction has been prevented from growing worse, by reason of the character of operation which was performed. It is furthermore worthy of notice to state that he has not resorted to the use of sounds to keep the canal open.

CASE VI.—Operated upon in November, 1875. Has since resided in New Orleans, and I have had no opportunity to make a personal examination of his case, but

hear from him that he is perfectly well and has had no diminution in the size of his stream of urine.

CASE VII.—Operated upon July, 1876, five years ago. Has married since, and is the father of three children; an examination in February, 1880, showed his urethra open to 36 m.f., and no evidence of the least trouble. A letter from him contains this sentence: "Another bouncing boy; I am perfectly well, and you can score me down among the list of *radical cures*."

CASE VIII.—Operated upon December, 1876. This case examined a year ago shows the same condition that he was in when discharged; no recontraction, and general health perfectly good.

CASE IX.—The history of this case as given in your book, page 252, is interesting and worthy of notice. He was seen some two months ago and remains perfectly well. From the varied kinds and number of operations performed upon him; his frequent and rapid relapses from September, 1869, to November, 1875, will show the permanent value of dilating urethrotomy over any other method. I consider this a test case.

CASE X.—Operated upon November 19th, 1875. He continued perfectly well, and had no evidence of recontraction after his death, which occurred some two years since. He died from "phthisis."

CASE XI.—Operated upon in February, 1877. Was examined in 1879; no recontraction found. Have not seen him since 1879, but a recent letter informs me that he is perfectly well, and has had no trouble in urinating. No sounds have been used to keep open the urethra.

CASE XII.—Operated upon in 1875; not given in your book. Urethra opened to 38 m. f. A physician who has had some considerable experience in treating these cases; reports himself cured and from his own examinations says he has no recontraction.

Other cases could be given equally convincing, but as they are of more recent date I prefer to take old operations as more reliable, and better calculated to prove the value of your operation. As you will see, I have written in very great haste, as but little time remains for this to reach you before the meeting of the Congress."

Dr. E. L. R. Thompson of New Haven, Conn., reports the results in his 211 cases as follows, viz.:

In 174 cases re-examined at varying periods after operation there was no recontraction.

Twenty-two cases which were not re-examined were perfectly well when last heard from.

In 8 cases there was perfect relief for a length of time, then a return of symptoms, when on re-examination recontraction was found to have occurred.

In three cases which were still under treatment, most of the symptoms were relieved, some still remaining.

There had been only partial relief in four cases.

Of my own first 100 tabulated cases, out of 36 re-examinations with the bulbous sound, 31 were found free from stricture, 12 over six months, 3 over one year, 1 two and a half years, and 1 three years after operation (Otis on Stricture, p. 100).

In my second series of 136 tabulated cases (*ibid.*, p. 324), out of 82 re-examined, 67 cases were found entirely free from stricture.

3 cases 6 years and six months after operation.

2 " 5 years and over.

3 " 4 " "

10 " 3 " "

7 " 2 " "

20 " 1 year "

10 " 6 months and over, (*ibid.*, p. 319).

In the second edition of my work (prefatory remarks), two cases were cited, re-examined in May, 1880, thus *over eight years from the date of operation*, and found to be free from every trace of stricture, the urethra being free to the passage of 30. bulbous sound in one case, and 32. in the other. In the first case five strictures were originally present, the smallest of a calibre of 22 f. In the second case there were also five strictures operated on, the smallest 16 f.

In addition to these cases was one, a surgeon, operated on March 6th, 1875, for four strictures defined by a 24 bulb in a urethra of normal calibre 36 f.

Re-examined May, 1880, and found free from stricture by the easy passage of 36. bulbous sound, six years

after operation, and no instrument introduced during the interval.

Again, in 1881, I had an opportunity of re-examining two other cases, one (the first), whose strictures, four in number, were divided from 27 f. to the normal urethral calibre (in this case), viz., 36 f. The second, where six strictures were originally present, ranging from 24. to 30. in a urethra of 38 f. and when an acute inflammatory discharge had been present for over four months. In each of these cases a radical cure was demonstrated, the former seven years after operation and the latter over eight years. In May, 1883, I examined a case operated on in May, 1871—two strictures—and another operated on in June, 1874, in which not the least recontraction had taken place, thus showing a permanence of results with, in the first place, thirteen years, in the second nine years' interval between operation and re-examination.

Dr. Stuart Eldridge, (formerly Professor of Anatomy in the Georgetown University, U. S. A., and now chief surgeon of the general hospital at Yokohama, Japan), reported a case in the *New York Medical Journal* of May, 1879*, where from long-standing disease the urethra was contracted to a filiform size, throughout the ante-bulbous portion. The operation of M. Maisonneuve was first performed, and this immediately followed by the introduction of my dilating urethrotome, and the urethra raised through its use to the supposed original calibre of the canal. The patient made a good recovery, and on a post-mortem examination of the case, made two and a half years after the operation, the urethra was found to be entirely free from stricture. In his description of the post-mortem appearances, Dr. Eldridge says, "The most careful examination of the specimen failed to discover the slightest pathological constriction at any point, while neither thickening nor induration could be discovered by the most pains-taking search." This statement was fully verified through the

* Reprinted with wood-cut in the appendix to 2d edition of "Otis on Stricture of the Male Urethra." Putnam's Sons, New York, 1880.

specimen which was forwarded to me by Dr. Eldridge, and presented to the New York Pathological Society in the latter part of the year 1879 (see Appendix, "Otis on Stricture," Putnam's Sons, 1880).

When it is considered that the operations reported in the foregoing pages have occurred in the practice of but six surgeons, and that many hospitals in America and nearly, if not quite, every hospital in the City of New York, is supplied with instruments for the performance of dilating urethrotomy, and that this operation there is no longer a novelty; when, also, it is considered that the operation is practiced by many surgeons in private practice in America and in Europe, it will be understood that the record of operations, considerably exceeding two thousand, might have been greatly increased, and have still further confirmed the statements as to the safety and utility of the operation of dilating urethrotomy. The fact that when properly performed its benefits are so prompt and pronounced, and that it is so readily done, has doubtless induced many surgeons to venture upon it without sufficient knowledge of the operation or without sufficient surgical experience, or without the proper instruments. For these, and often for other reasons, the strictures have not, in many cases, been thoroughly divided or properly cared for subsequently, and the results have, in many instances, been imperfect. I do not, however, hesitate to say that with the (my) well-made, short, straight, dilating urethrotome, used with the knowledge, skill, and judgment, necessary to the performance of any operation for the relief of difficulties of like gravity, and followed by judicious treatment until the healing has taken place, any good surgeon may attain results similar to those which I have cited. When the operation is confined to the limits of the antebulbous portion of the urethra, where alone it should be employed (and where, fortunately, by far the greatest proportion of strictures will be found), it may be said, practically, to have been demonstrated to be a safe operation. Not a death has yet, as far as my knowledge extends been fairly recorded against it, and surgical accidents may be justly claimed to be fewer than in any

other operation, of like importance, in the whole range of operative surgery.

In my own experience of over nine hundred operations, *not only have I never had a death or a permanent disability of any sort, but I can say to-day that I have never performed the operation as advised in the foregoing pages, either to my own regret or without marked or acknowledged benefit to the person operated on.*

LESSON LIV.

Consideration of the operation of dilating urethrotomy continued—Important in proportion to the degree of difficulty presenting—Subjects of disease of bladder and kidneys most liable to suffer from any operative procedure—Dilating urethrotomy less grave than any other mode of relief—Strictures in the anterior portion of the urethra less liable to cause trouble from operation than those seated more deeply—Greatest proportion of strictures shown to be located in the anterior portion of the urethra—Strictures of large calibre most frequently the cause of trouble—Easy and safe relief to such strictures by dilating urethrotomy—Details of operation in cases of strictures of large calibre—Strictures at or near the meatus urinarius—Mode of operation—Strictures more deeply seated—Mode of operation by means of the dilating urethrotome.

The operation of dilating urethrotomy, like any other legitimate surgical procedure, is important in proportion to the amount of difficulty present and the gravity of the troubles complicating it. In subjects affected with grave disease of the bladder and kidneys, any operation on the urinary apparatus is more or less hazardous. Dilating urethrotomy, however, has been fully demonstrated to be the least so, as in its performance the least degree of injury is inflicted necessary to division of stricture, and besides, in the very greatest majority of cases, it is not necessary to pass any instrument through the deep urethra or beyond the locality of the stricture.

In direct opposition to the statements of authorities who have not examined the urethra by means of the urethrometer, but who have made up their statistics from post-mortem inspection, it will be found that by far the greatest proportion of strictures calling for operation or any treatment, are situated in the penile urethra, and will be found in less frequency the farther we recede from the meatus urinarius. In point of fact, being the result of inflammatory action, stricture will be found most frequent in the anterior portion of the urethra, where inflammations are most frequent and severe.

In my experience, the greatest number of strictures which call for operative measures are the so-called "strictures of large calibre," which produce and prolong urethral discharges, sometimes causing reflex disturbances which result in recurring epididymitis, spasmodic stricture and retention of urine, frequent micturition, painless or otherwise, catarrh of the bladder, neuralgias, abdominal, dorsal, or sciatic, and a legion of possible troubles, mental and physical, which can only be reached efficiently by removal of the strictures.

For all such cases dilating urethrotomy presents a promise of speedy and permanent relief, and as a rule, when properly performed, resulting in a radical cure of the stricture.

The treatment of stricture by dilatation, that is to say, through the introduction of gum-elastic bougies, whalebone, etc., of various kinds and sizes, and steel sounds, long in use and approved by all authorities, has always been open to the objection that the results of such treatment, when well borne, were but temporary, and that once required, such dilatation was necessary throughout the life-time of the patient. There has never been any question but that dilatation of stricture was invaluable for temporary relief, especially in cases where urination was interfered with, or where the circumstances were such, from any cause, that time could not be spared for more radical measures. In point of fact, it is only within a few years that any causes short of interference with the act of urination were considered to warrant other operative measures than through gradual dilatation. It was in 1862 that I first demonstrated to the profession the capacity of stricture of long calibre to perpetuate, even to originate a urethral discharge, and scarcely a year later, the influence of such stricture in causing reflex irritation and neuralgias,* and spasmodic stricture. The possible influence of strictures of large calibre has now come to be gen-

* Paper On Reflex Irritation Throughout the Genito-Urinary Tract, resulting from Contraction of the Urethra at or Near the Meatus Urinarius—Congenital or Acquired. Read before the N. Y. Academy of Medicine, Feb. 19, 1874.

erally accepted, and the propriety of operating on such strictures, with the view of effecting their permanent removal, it may be said is now well established.

The chief cause calling for treatment of strictures of large calibre is a persistent or a persistently recurring urethral discharge. If this is at all inflammatory, it is desirable to defer operation until the discharge has, by rest and sedative injections, come to be painless, or better, until it has for the time entirely ceased. Cases will occasionally present where such discharge is rebellious to all treatment, and continues profuse and more or less painful. In such cases, the inflammatory action usually interferes with the rapidity and completeness of the recovery.

DETAILS OF OPERATION ON STRICTURES OF LARGE CALIBRE.

Arrangements should in all cases be made for the patient to remain in bed from forty-eight hours to a week after the operation. Administration of ether facilitates the accomplishment of the different necessary procedures. With proper arrangement of all preliminary details (such as measuring, and locating, and noting down the different strictured points, arranging instruments, etc.), the operation may usually be done under the first effect of ether. 1st. After having ascertained the normal urethral calibre in a given case, note carefully, in writing, the different points of stricture, the calibre and extent. 2d. If the urethral orifice is not of the full size of the normal urethra, as previously estimated, operative measures should commence by a restoration of the canal at this point. Thus, holding the penis tightly with the thumb and first finger of one hand, introduce a well-oiled, straight, blunt bistoury for a full inch, then testing the density of the tissues (which may vary from slight thickening to dense cicatricial structure) by drawing out the blade under gentle, steady pressure, again introduce, and divide to a point which appears to be sufficient to enlarge the canal to the predetermined proper size.

Now, with a bulbous sound corresponding to this, test the size attained. If the bulb passes in and out with *perfect freedom*, the operation is accomplished. If, however, there is the *slightest hitch*, either in entrance or withdrawal, the bistoury should be re-introduced, and with a forefinger supporting the under aspect of the glans, and make repeated cuts with exceeding care until cicatricial tissue is no longer felt, and the bulb passes in and out without hindrance. In cases when the meatus is situated very low, almost looking downwards (as it does in some cases), this operation is often a most difficult and delicate one, that is, to get sufficient room without making an artificial hypospadias. This of course must be avoided. It is always a misfortune to be obliged to incise the canal superiorly at this point, not only because recontraction is much more likely to occur, but because the certainty of getting through the cicatricial tissue is much less, and subsequent induration and recontraction is more likely to follow. In cutting inferiorly, too, the pocket of the fossa navicularis is obliterated, a very important point in cases of gleet discharge, as it may be held here, notwithstanding the superior incision, and then by still holding the discharge, still fail to afford the relief anticipated from enlarging the orifice.

Where division of the orifice is alone required, respect should still be had to the possibilities of troublesome hæmorrhage resulting. A little pressure between the thumb and fingers will commonly suffice to arrest immediately following operation. Again, hæmorrhage is quite free and persistent, or will come on soon after operation from movement or urination. A couple of narrow paste-board slips may be laid, one on each side of the penis, and pressure on these made by two or three turns of bandage, the end of which may be split into six tails, brought around and tied with much or little pressure, as required. I always insist upon every patient, whose urethral orifice I divide, securing a nurse or intelligent friend to watch with him for the first two or three nights after the operation. The act of erection occurring during sleep sometimes causes hæmorrhage to

recur, and considerable blood may be lost before the patient awakes. I have seen fully half a pint lost in this way within an hour or two. My friend, Professor Thomas M. Markoe, related to me an instance, where many years ago he was called to see a man who was said to be bleeding from the penis; the man died just before Professor Markoe arrived. On examination it was found that he had bled to death from a division of the meatus urinarius. . This was several years before anything was understood about normal urethral calibre, but it is noteworthy, as showing that in certain cases of hæmorrhagic diathesis, serious hæmorrhages may occur from so slight an operation as a division of a contracted urethral orifice. From the fact that occasionally tendency to troublesome hæmorrhage does exist, and we cannot tell beforehand which cases will behave in this way; therefore, all cases should be cared for as if it were a certainty that hæmorrhage would take place and this care should not be relaxed until three days from the date of operation. The after-treatment consists simply in the introduction of a full sized bulb daily or every other day, until healing is complete. If healing is sluggish, it may be stimulated by a little carbolated lotion applied through a film of absorbent cotton. If a diphtheritic pellicle comes on, as occasionally will occur, a powder composed of equal parts of non-saccharated pepsin (Boudault's), and sub-carbonate of bismuth may be sprinkled into the opened orifice, three or four times a day.

In regard to strictures situated beyond the fossa navicularis, or the first inch of the urethra, an entirely different procedure becomes necessary. All strictures beyond this point should be incised on the superior surface of the canal and directly in the median line. The incision should be made to include every fibre of stricture tissue if permanence in results is anticipated. The advantages of the superior incision are chiefly two: First, the tissues in this location are less vascular above, especially when approaching the bulbous portion, and hence the liability of troublesome hæmorrhage is lessened. Secondly, the certainty of dividing through

the entire thickness of the stricture without unnecessary risk is greater. When the stricture tissue is quite thick and approaches the surface of the penis the incision necessary to divide it completely on the inferior wall, would sometimes not only extend into the cellular tissue outside of the urethra and thus perhaps lead to formation of abscess, but might go quite through the integument and result in a troublesome fistula. Any operative measure which would result in complete division of such stricture would make it necessary to put the integument into a state of extreme tension and thus make it so thin that it would be easily cut through. In order to divide any stricture with certainty and completeness it must first be put on the stretch so as to fix and thin the stricture tissue and thus easily sunder it. This is best accomplished by means of the dilating urethrotome. Having then divided the stricture or contraction at the urethral orifice after the manner recommended, examine as to the locality and calibre of all deeper strictures as far back as the bulbo-membranous junction, which is usually not to exceed five and a half or six inches from the urethral orifice. Having located any presenting strictures, take the dilating urethrotome well oiled and the blade in its concealment at the extremity. Place upon the shaft a thin rubber band (once or twice doubled to keep it in place) at just the distance from the heel of the blade which corresponds to the previously measured distance from the extreme posterior border of the deepest stricture. Then, the patient lying on his back on a lounge or bed, and the surgeon standing by the side most convenient, introduce the shaft, again well oiled, into the urethra until the rubber band is one half of its breadth well in the meatus and the dial face of the urethrotome looking squarely upwards. Let the penis now be steadied by an assistant, so that the incision shall be directly in the median line.

LESSON LV.

Description of the operation of dilating urethrotomy continued—Small amount of hæmorrhage usually resulting—Method of arresting hæmorrhage—The cold-water coil—Method of arresting hæmorrhage from the deep urethra—The perineal crutch—Close strictures in the deep urethra best treated by external perineal urethrotomy—Great majority of strictures in the ante-bulbous portion of the urethra—After-treatment in operations by dilating urethrotomy—Treatment of strictures of small calibre—Urethral fever—To prevent this—Necessity of great care in cases of long-standing urethral trouble and in elderly persons—Preparatory treatment—Other accidents occasionally following dilating urethrotomy—Accidents most commonly the result of want of proper care subsequent to operation.

The next step in the operation is to turn the screw at the handle gradually, as indicated by the hand on the dial, so that it marks two millimetres (the blade being just two millimetres in breadth), beyond the previously ascertained normal calibre of the urethra, and draw *the blade* completely through the breadth of the posterior stricture, and push it back again into its place of concealment. Turn the screw button still further, a millimetre or so, and if no sense of resistance is felt, the stricture is probably divided. If resistance is still felt, turn up the screw so as to indicate one to two millimetres more, and again test, and so on until resistance from stricture tissue is not recognizable. If there are more strictures interiorly apply the blade in the same way to each if they are an inch apart, and there be no lessening of the normal calibre between them. If, however, they are nearer together than an inch, or there is even slight contraction of the canal in the interspace, draw the blade through all at once, and push it back as before, and test by turning the screw as previously described. If the strictures are so numerous or so dense that dilatation is difficult, remember that the instrument is not intended as a divulsor, but only to put the strictures on the stretch sufficiently to fix and thin them, but without damage to the instrument. Therefore, when dilatation is in this way hindered, pass the blade

through the strictures and turn up farther. If again unduly resisted, repeat this procedure until the hand on the dial indicates a dilatation fully two millimetres above the previously estimated, or ascertained normal calibre of the canal. In such numerous and resistant strictures they are likely to be of unusual thickness, and hence the incisions must be correspondingly free. After division, turn down the screw button until the hand on the dial indicates that the instrument is half closed, and withdraw, in this way preventing any engagement of tissue between the bars.

The withdrawal of the dilating urethrotome is usually accompanied, or immediately followed by a gush of blood, perhaps three or four drachms, and then slight oozing for some little time after; rarely, however, requiring especial measures, except winding the penis snugly in a folded towel, or a three-inch bandage. If considered desirable, the penis may be drawn up and pasteboard splints applied conveniently as far back at three and one-half inches, in the same way as recommended in hæmorrhage from the meatus, or, in addition, an open end, soft or gum-elastic catheter may be introduced into the urethra to a point just beyond the posterior cut portion, before the bandage is applied. A straight tube is better than a solid bougie, as it permits urination without removal. The cold-water coil is also of value in arresting slight hæmorrhage.*

The Cold-Water Coil in Inflammation of the External Male Genital Apparatus, and as an Antiphlogistic after operations on the Penis.—The apparatus which I have designated the "Cold-Water Coil" is formed of a line of the small-sized India-rubber tubing of one-sixteenth of an inch calibre, and six or seven yards in length. At the middle portion this tubing is coiled upon itself, so that, by half a dozen turns or more, it presents sufficient capacity to loosely encircle the entire penis or scrotum.

This coil, with the length of tubing proceeding from it, forms an apparatus through which, on placing one extremity of the tubing in a bowl or tumbler of ice water, exhausting its contained air (by suction, or by drawing the tube through the finger), a siphonic current is established through the coil. The discharge-pipe being placed on a lower plane than the water-supply, the current may be kept up until the vessel is emptied.

The rapidity of the flow can be regulated either by raising or lowering

*Reprinted from the *New York Medical Record*, January 9th, 1875.

Firm pressure with the fingers on the urethra, just behind the posterior edge of the cut, and a closure of the meatus with the fingers of the other hand is a ready method of arresting a sudden gush, which may come on urination or in consequence of an erection. This is rare, however. The worst that can happen should always be anticipated in every case, and be thoroughly prepared for; but in the very greatest majority of cases the hæmorrhage needs but little more than the folded towel, except *watching* for the first three or four days, not forgetting to keep in mind the liability to erections and consequent tendency to hæmorrhage during sleep, and especially after operative interference of any sort. If the bleeding comes from so far back that it becomes difficult of control on this account, as in the vicinity of the bulb, it may ooze into the bladder. The perineal crutch can be readily extemporized, and with a graduated compress in the perineum the crutch so arranged that its foot will bear against some firm point

the end of either tube, which is the simpler plan; but the more convenient one is by a tapering, double silver tube, attached to the discharge-pipe, a sponge being fitted to the inner tube. This sponge, when the inner tube is pushed down into the smaller end of the outer tube, becomes compressed and gradually obstructs the flow of water, until not a drop will exude. This contrivance may be regulated so that either a free stream can pass, or that the single drops shall follow each other, more or less rapidly, with the regularity and precision of a timepiece.

By means of this arrangement, I have been able to apply cold to the penis or scrotum continuously and conveniently both to the patient and to myself. The coils of tubing are retained in position by a band of cotton or linen cloth. A ready method of constructing this apparatus is by placing a strip of thin cloth, six inches in length and two in breadth, lengthwise, upon a large speculum or a four or six ounce vial. The tubing, taken at the middle of a piece six or seven yards long, is wound around the vial, and, after the requisite number of turns are made, the projecting ends of the cloth are doubled over and stiched to the under layer between the turns of tubing. If, after completion, the turns are found too small, they may be readily enlarged by drawing the tubing through the cloth to any desired extent.

I have found this simple contrivance of essential service in the acute form of gonorrhœa, reducing inflammatory action promptly, and thus giving relief to painful micturition and erections.

It has proved of great value in keeping down inflammation and in preventing erections after the operation of circumcision. I habitually use it for the same purpose in operations for stricture, and with results more prompt and satisfactory than those hitherto attained by any medication or application with which I am familiar.

at the foot of the bed, and the opposite end press against the compress. This has the advantage of elastic bandages sometimes used as being easily arranged and controlled by the patient allowing the weight of his body to bear upon the crutch, when necessary to arrest the bleeding, and easing up on it when it has ceased. This may be readily made by cutting a broom-handle of the proper length, and tacking across one end a small bit of wood slightly concave to fit the perineum. If necessary, the bladder may be emptied of clots by means of an ordinary pint syringe and a large flexible catheter. This process may be facilitated by mixing a drachm of pepsin with two or three ounces of water, and injecting this into the bladder. The solution of the clots are in this way speedily effected, and the bladder may then be easily emptied. On account of the liability to free and possibly dangerous hæmorrhage after division of



FIG. II. PERINEAL CRUTCH.

stricture in the deep urethra, and the difficulty of controlling it, I do not advocate division of strictures with the dilating urethrotome beyond the bulbo-membranous junction. Strictures beyond this point, which are not readily dilatable to full size of urethra by means of steel sounds, are best and most safely divided by external perineal urethrotomy.

Reference to statements previously given, show that strictures beyond this point are rare, most of the alleged strictures in the deep urethra being spasmodic in character. After-treatment of cases where dilating urethrotomy has been performed consists simply in ordinary means of reducing irritation by rendering the urine bland, and the introduction of a full-sized sound on the second day after operation, simply beyond the site of former stricture, and on no account passing it into the bladder. This to be continued every second day, until healing has taken place. This usually requires from 10 to 12

days. If all goes on favorably the patient may usually visit the surgeon at his office after the fourth or fifth day, especially where the incisions have not been extensive. In the introduction of sounds, or in fact of any urethral instruments, no force should be used. Simply let the instrument, well oiled, follow down the canal almost if not quite by its own weight; gently turning it this way and that, as a fold of mucous membrane arrests its progress.

Strictures of small calibre, or those too small to permit the passage of the urethra-metre (18 to 20 millimetres circ.), may be gradually brought up to this size by gradual dilatation, introducing soft or gum-elastic bougies of increasing sizes once in three or four days. If the stricture is very dense and irritable, and urethral chills or other troubles are caused by attempted dilatation, a division of the stricture tissue with the urethrotome of M. Maisonneuve may be advantageously used to prepare the way for the dilating urethrotome. It is a good plan, where the irritability of the deep urethra is not great, to draw off the urine for the first two or three days after operation. The occurrence of urethral fever is thus often prevented, when it might otherwise occur.

Urethral fever is not by any means common after an operation by dilating urethrotomy in the anterior urethra, but seems to occur more frequently when the patient urinates over the cut surface soon after operation.

In persons of highly nervous temperament the predisposition to urethral fever is the rule, and any slight mechanical interference may give rise to it. Malarious antecedents increase in a marked degree the probability of its occurrence. The presence, likewise, of any disease, acute or chronic, of the deep urethra, prostate gland, bladder or kidneys, is a very great and unmistakable predisposing cause. I, therefore, hold that the previous recognition of any of these conditions is of the highest importance in the treatment of urethral stricture by any method, and, further that, *in cases of long-standing urethral trouble, and in all elderly persons, the passage of any instrument through the urethra into the bladder should never be attempted without a preliminary ex-*

amination of the patient's urine to determine the state of the bladder and kidneys.

The predisposition to urethral fever in persons as above described, suggests that all possible precautionary methods should be used to prevent this accident whenever, as is sometimes the case, surgical interference becomes imperative. To this end *rest* in the recumbent position for a day or two is of value. Hot sitz baths, temp. 110, for 3 or 4 minutes morning and night. Muriated tincture of iron and tonic doses of quinine in persons of debilitated habit. Immediately previous to the proposed operative procedure I am in the habit of administering 5 to 10 grains of quinine (preferably 10) in pill or capsule, or instead of this, a suppository composed of ten grains of the bisulphate of quinine and a quarter of a grain of the acetate of morphine. It is not from the fact that urethral fever in such cases is more likely to occur, and with possibly greater severity, than in healthy persons, that this predisposition is important, but because when it does occur, the danger of the reflex irritation extending to the ureters and kidneys, and inducing a suppression of urine, is greatly increased, and that suppression so induced is frequently and rapidly fatal.

In cases of rise of temperature, after operation with or without distinct rigors, I am in the habit of administering 5 grains of quinine every 6 hours, and a drop of aconite every half hour or hour, until the fever subsides, which is usually within 24 hours. Slight swelling of the penis, due to a localized inflammation of the spongy urethra at the point of incision, occasionally occurs. I have seen three cases of this sort out of over 1000 operations. This subsided in these cases within a few days without other treatment than weak carbolic injections, 5 grains to an ounce and the use of the cold-water coil. Dr. Bevan of Baltimore, in his report of 200 cases operated on, comprising 446 strictures, reports the occurrence of 4 peri-urethral abscesses. I have never met with such an accident. Acute urethritis sometimes results from the previous existence of an irritating purulent discharge.

Such an accident contra-indicates the use of sounds, until they may be introduced without especial pain.

Inflammation following the operation sometimes gives rise to chordee, and may continue, leaving a curvature persisting for several weeks or months after the wound of operation has healed. I have, however, never seen a case where the plastic exudation causing it was not finally absorbed. Two cases have come to my knowledge, where the frequent passage of sounds (daily) was kept up, notwithstanding an acute inflammation was present, and where curvation resulted which gave great annoyance for over a year. One where the introduction of sounds was daily practised for six weeks, with so great



FIG. 12. AUTHOR'S DILATING URETHROTOME FOR DIAGONAL DIVISION.

pain that ether was required to effect it, and yet this case finally recovered. In the other, operated on a little over a year ago, aggravated in the same way, the curvature still persists. Such rare cases, evidently due to gross error in after-treatment, cannot legitimately count against the operation, when well and judiciously performed. Several cases of persistent curvation of the penis resulting solely from gonorrhœal inflammation and consequent stricture have come under my notice, and which have been reduced by the operation of dilating urethrotomy by cross section of the constricting band with an instrument especially devised for this purpose dividing the stricture diagonally.

LESSON LVI.

SPASMODIC STRICTURE, OR URETHRISMUS.

Spasmodic urethral stricture—Chronic spasmodic stricture, or ureth-
 rismus—Clinical cases in illustration—Case I., of seventeen years' du-
 ration—Complicated with incontinence of urine, etc.—Cured by divi-
 sion of a contracted meatus urinarius combined with over-distension
 of the membranous urethra—Case II.—Case treated for close or-
 ganic stricture by eminent surgeons—Subsequently proved to be spas-
 modic and cured by division of anterior strictures of large calibre—
 Case III.—Treated for close, deep organic stricture for three years—
 Completely relieved by division on anterior stricture of large calibre—
 Case IV.—Treated for impassable deep stricture for years—Repeated
 aspirations of the bladder for prolonged retention of urine—Promptly
 and permanently relieved by division of anterior strictures of large
 calibre.

The occurrence of obstruction to the passage of in-
 struments through the deep urethra is frequent, and
 yet it has been shown that organic stricture beyond
 the bulbous urethra is exceedingly rare. In the very
 largest proportion of cases this obstruction is due to
 the spasm of the muscular or membranous urethra,
 caused by the irritation consequent upon stricture in
 the anterior portion of the canal. The following cases
 will show how readily the error of mistaking spasmodic
 stricture for organic stricture may be made:

CASE I.—A gentleman, æt 39, holding an important
 government position, came under my observation in
 October, 1875, with the following history: Acute ure-
 thritis, from contagion, at the age of fifteen, (1857,) se-
 vere, and followed by a gleet, which lasted, under a
 varied treatment, for three years. In 1856, another
 acute attack, following a suspicious contact, lasting
 several months. No subsequent exposure. In 1858
 took a long, hard, horseback ride, with a young lady,
 during which had urgent desire to urinate, but was
 obliged to postpone for several hours. When opportu-
 nity occurred, could not; retention complete; was fin-

ally relieved by the introduction of a catheter. Since that time has always had more or less trouble in urination; frequent attacks of retention after vinous excess, or fatigue, one lasting for thirty hours. In 1862 came under the care of a distinguished surgeon who, after examination, attributed the trouble to a close, organic, stricture in the membranous urethra. Internal urethrotomy was performed. After recovering from this operation, the patient, as directed, passed a catheter himself, at stated intervals, often leaving it in from one to two hours. After a few months, neglecting the use of the catheter, he had another attack of retention. Another surgeon was called in, who attempted divulsion. The instrument "got jammed," (as the patient expressed it,) and, in withdrawal, several shreds of mucous membrane were found attached to it. Much and prolonged suffering resulted. His general health became impaired, suffering also from occasional retention up to 1867, when, without special treatment, he began to improve, and went on active duty. He was, however, at this time, much annoyed by habitual incontinence of urine. In 1871 went under the care of the late Dr. Armsby, of Albany. Then followed two months of treatment; patient confined to bed. During this time systematic and prolonged but fruitless efforts were made to enter the bladder. The operation of external perineal urethrotomy, without a guide, was then proposed as the last resource. This was declined. Some improvement in the incontinence taking place during the following few months, patient went on special duty. From 1872 to the present time, has had much incontinence, and occasional attacks of retention which were caused either by excitement, cold or wet feet, or any interference with the general health. Relief had been attempted by various surgeons, resulting in much hæmorrhage in several instances, but in no instance was the surgeon successful in entering the bladder. *Relief always came spontaneously during sleep.* After rising from stool, a certain amount of urine habitually escaped. This seemed to the patient to "collect in the urethra just in front of the anus." Can now control the urine during the day; voiding it

at will, but in short, irregular jets, or in drops—never having the feeling of completely emptying the bladder. During sleep the urine dribbles off, *completely emptying the bladder*. Retention occurring during the day is often relieved by *letting warm water run on the wrists*. Urine can never be passed, even in drops, in the presence of any one.

Present Condition.—Great nervous debility ; easily excited ; very irritable ; tremulous, starting on slight occasions ; appetite variable—generally poor ; weight 114 lbs. Urine examined, and found to be normal. The patient refused to submit even to the most superficial physical examination, except under the influence of an anæsthetic, and this he desired to postpone for a couple of weeks. He was directed to take quinine and iron, and to rest in a recumbent position for three days previous to the proposed examination.

At 1½ P.M., October 29th, the patient was brought under the influence of the nitrous oxide gas, and then of ether, (through the apparatus of Mr. Clover, of London,) by my associate, Dr. L. Bolton Bangs. An examination was then made, resulting as follows : Genital apparatus well formed, circumference of penis, 3½ inches, meatus 24 f. urethra 31 f. to 2½ inches, at which point it was contracted to 26 f. Three distinct bands in the succeeding inch, urethra then enlarging to 32 f., was clear for this size bulb, to the bulbo-membraneous junction. Here, however, an obstruction was met, which resisted the passage of gradually decreasing sizes, of both solid and flexible instruments, down to the finest filiform bougie. I then divided the contracted meatus to 31 f., and with the dilating urethrotome raised the same point, incised the contractions from 2½ to 3½ inches. Then began a patient and systematic endeavor to pass the deeper obstruction. This lasted a little more than one hour, (during which time, the anæsthetic was repeatedly carried to *stertor*,) when, finally, a fine English filiform guide-bougie was insinuated, closely hugged, through the obstruction and well into the bladder. After remaining for a minute or two, it was found to be free, and easily movable ; suddenly, it was again closely held.

This occurred, first in my own hands, and subsequently in those of my associate, Dr. Bangs. From the outset, I had strongly suspected the obstruction to be, in a great measure, spasmodic. The first occurrence of trouble after the long, hard ride, and a prolonged voluntary retention of urine; the subsequent failure to get substantial relief by the deep urethrotomy; the frequent subsequent retentions and incontinence, and failures of skilled surgeons to enter the bladder with even the smallest instruments; more than all, the spontaneous and thorough emptying of the bladder *during sleep*, and finally, the obstruction playing "fast and loose," with the small bougie I had succeeded in passing.

All these considerations combined to give me an assurance, almost positive, of spasmodic stricture, dependent upon an anterior urethral irritation; but I had already removed the anterior obstructions, and yet the passage of large instruments was resisted. I fully believe that, with patient effort, the spasm of the *compressores* would give way; but the patient had been under æther for more than an hour, and I could not consent to forego the advantages already gained, on an uncertainty. I therefore screwed on the staff of the urethrotome of Maisonneuve, and attempted its entrance. After passing it down three or four inches the guide was arrested: gently pressing it for a few minutes, without the assurance of free progress, I withdrew it and found that the filiform guide *was doubled back upon the staff*. I then unscrewed the guide and attempted the passage of the plain staff. This, after gentle, persistent pressure, some five minutes or more, guided by a finger in the rectum, resulted in its passage through, and well into the bladder. The blade of the instrument, (cutting up to twenty-two, was then passed down, *meeting with scarcely any resistance in the membranous urethra*. On its withdrawal a 31 f. solid steel sound was passed and without force into the bladder.

I was then fully confirmed in my original impression that the deep obstruction was mainly if not entirely spasmodic. The blade of Maisonneuve which had been passed could only cut up to 22 f. and yet it had been

easily followed by a solid-steel sound number 31. The bare fact, however, that *cutting* had been done, more or less, would warrant the inference that the obstruction was *organic* and had been removed by the 22 blade of M. Maisonneuve. It was a matter of great regret that a more prolonged trial with a large sound had not been made before resorting to the knife, but this was unavailing, and the question of the true nature of the obstruction was necessarily left in doubt. The operation was completed at 3 P.M. of the 29th of October, having occupied one and a half hours. A suppository of quin. sulph. gr. x and morph. sulph. $\frac{1}{4}$ was administered and the cold-water coil applied.

8 P.M.—Patient suffers from neuralgic flashes in both hips, quite severe; has frequently suffered in the same way during attacks of retention. At 10 P.M., *he passed water in full stream*, but with considerable pain. Four hours after, (30th, 2 A.M.,) had a sharp chill, lasting an hour; followed by fever and sweating. Suppository quinine 10 gr., and morphia $\frac{1}{4}$, repeated. At 10 A.M. again passed water in full quantity, with much less pain. At 12 o'clock, (two hours after urination,) had another chill, but much less severe than the first. Mental depression very great. Some sciatic pain.

October 31st, M.—Has had no more chills, passed water in good stream; no more neuralgia. Pulse and temperature normal. No more incontinence during the day, much less at night. Still much demoralized, but hopeful.

November 1st—Still improving. Nitrous oxide gas administered by Dr. Bangs, and 31 steel sound introduced. No resistance to the passage of the instrument; bleeding slight. Four hours after the introduction of the sound, he had another chill, followed by a temperature of 103°. Quinine and morphia administered as before, and stimulating liniment applied along the spine. Another chill six hours later, one hour subsequent to urination. After this, patient improved rapidly. Free from pain. No incontinence day or night. Quinine 5 gr. three times a day. No other treatment up to November 4th. On this date the gas was again adminis-

tered, (without which the patient would not submit to the least interference,) and 31 solid sound again introduced. Chill followed four hours after, temperature rising again to 103° Fahr. Nothing noteworthy subsequent to this until the 6th, when under gas, the sound was again passed. No recurrence of urethral fever. Sound passed again on the 8th. Went out walking on the 9th. From this the improvement was steady and rapid up to date, November 13th. No further introduction of instrument. Urine is now held, with ease, for six hours, and passed in large stream, promptly and without discomfort. General bodily and mental health greatly improved. Goes into the country to-day for a few weeks.

November 26th.—The patient again presents, saying that, after leaving New York on the 13th of November, he had continued to improve for a week or more, neither troubled with incontinence nor pain; nor any marked difficulty in emptying the bladder. At the end of that period, however, he began to notice less control over his urine at night, and the stream diminished in size within twenty-four hours, so that he was in as bad a condition, apparently, as ever. He stated, however, that he had no pain, and could empty the bladder at will, though only by drops, or fine, short jets. The return of trouble was attributed by the patient to exposure in a cold out-side water-closet, repeatedly, during a long and severe storm; confinement to house, and want of his accustomed exercise. He is much discouraged on account of the return of his incontinence at night, and his frequent necessity to urinate during the day, but suffers no pain.

The sudden return of incontinence and difficult urination, pointed very squarely to a *spasmodic* cause, rather than to recontraction of stricture. The patient was at once put under suppositories of extract hyoscyamus gr. 4, and extract belladonna gr. $\frac{1}{4}$, every six hours, with quinine and iron internally. During the next three days, the condition of the patient was not materially altered, although the constitutional effect of the suppositories had been had.

On the 29th of November, an examination under

the nitrous oxide gas, showed a *re-contraction of the urethral orifice to 24 f.* This was now freely divided to 33, and 32 solid steel sound passed without difficulty to the bulbo-membranous junction, where it was abruptly resisted. Decreasing sizes were then tried, but without avail, until a filiform No. 1 was used. This passed into the bladder, but was quickly grasped in the membranous urethra, as on the occasion of the first operation. The spasmodic element was now so pronounced at this point, that it was thought wise to defer any further interference until the full effect of the division of the re-contracted meatus should be ascertained.

November 30th.—*Urination easy in a full, round stream.** This improvement, with complete relief from incontinence, continued until December 2nd, when the tissues at the meatus became inflamed, and the urinary troubles returned, dribbling as bad as ever: urination frequent; lotio plumb. et. opii applied.

December 3d.—Inflammatory condition better, and patient passes quite a fair stream. Only 30 bulb can be introduced through the meatus.

At 12½ P.M. of this date, patient was again brought under the influence of the nitrous oxide gas and ether, and the meatus incised, so that 34 f. bulb passed with ease.

A large and very flexible bougie (11 f. at the point and 30 from three inches,) slipped over a small sound to give it resisting power, was then passed down to the bulbo-membranous junction. Here it was steadily held in line with the sub-pubic curve, for five minutes, no yielding, although the patient was well under the influence of ether. I then withdrew it, and passed down a 32 blunt-pointed solid steel sound and held it gently, and steadily pressed against the resisting muscular spasmodic contraction, for nearly ten minutes. The ether was then carried to profound anæsthesia, when suddenly the sound slipped into the bladder. I then

* At 6.30 P.M. of the 29th, patient writes a note, saying: "Dear sir: I have just passed an unbroken, fair-sized, and nearly round stream, with no dripping, until it was nearly all out, and no pain. When I say *fair-sized*, I mean compared with anything except my few days of first great relief.
Yours truly, — —."

took No. 34 f., and passed it, closely hugged, but without undue force, up to the handle, and thus well into the bladder. My object was, mainly, to over-distend the muscular urethra, as in the operation for vaginismus, to which the condition of the membranous urethra and its surroundings seem to me to be analagous. Bleeding very slight, and apparently from the incised meatus; administered suppository, 10 grs. quinine, and $\frac{1}{4}$ gr. morphine. At 5 P.M., patient had a sharp chill, with severe sciatic pains, and followed by fever and sweating. At 8 P.M. six drops of Magendie were administered by hypodermic injection; asleep in two minutes. Patient had a fair night, free from pain. Urine passed into urinal during sleep.

December 4th.—At $9\frac{1}{2}$, temperature $98\frac{1}{2}^{\circ}$, pulse 100, feels well; no further interference, except to continue quinine, 5 gr. every eight hours.

December 5th.—Passed a good night; some sciatic pains, no fever; passes a full large stream, emptying the bladder with a single effort.

December 8th.—Still doing well; no incontinence, passes his urine at will, in full stream; is much troubled with sciatic pains. For the last three days No. 32, solid sound, has been passed daily through, and somewhat beyond, the meatus, but always with the effect of bringing on or increasing the sciatic pains. There is now slight purulent urethral discharge. To stop all instrumentation. General health has not improved, appetite poor, and digestion difficult. Is taking quinine, Horsford's acid phosphates before, and pepsin after meals; to go out for a ride.

December 13th.—Sciatic pains have been relieved by the galvanic continued current; digestion improved. Urination free and painless; no incontinence. Goes home to-day with directions to continue the acid and quinine, to take exercise in the open air, but to cease all interference with genito-urinary apparatus, except by use of a mild injection for the slight urethral discharge which has remained since the last operation.

A few days later I received a letter, dated December 16th, from which the following is an extract: "The

journey (two hundred miles,) had no ill effect on me, further than to make me stiff and tired, my sciatic leg holding itself upon the verge of mutiny ; so I laid quiet and petted it. The next day I got up and down two pair of stairs, forty-six steps, twice ; taking a three block walk, and two quite heavy meals. Leg still stiff and sore. That brings me up to to-day, which records "better." *My stream of water retains its large size*, and gives me a good deal of satisfaction and no discomfort. The discharge and irritation are improved, but the former is not quite over. My appetite is good, and I think I shall gain quite rapidly now that I have begun to walk and eat."

January 29th.—A little more than seven weeks from last operation, patient called and reports : From date of last minutes, a gradual improvement for three weeks ; then improved rapidly, as only then did the sciatica quite leave him. The sciatic trouble was not in shooting pains as before, but in sore spots from the middle of the gluteal region, passing down the thigh of the same side. No sense of soreness, on pressure, at any point. Appetite good ; has increased in weight from 114 lbs. to 122 lbs. Makes a full stream, *which he can project to the distance of three feet*, but thinks, after long fatigue, his stream is not so strong. His spirits are good. He has entirely recovered from his mental demoralization ; works perfectly well on close mathematical problems for six hours on a stretch. For two years before the operation no semen passed, although he had all the sensations. Since then it passes perfectly at every orgasm. This trouble he states was the cause of his depression of spirits ; feeling, as he expressed it, "like a eunuch."

March 9th.—Called ; this morning, in good condition. Has gained seventeen pounds since the operation, and is quite well of his urinary trouble. When he is much fatigued, mentally, thinks the water comes too slowly ; when he is rested, it is all right, is in fine spirits. Has been overworked, and is off for a week in the Adirondacks.

May 20th.—Called ; has gained in flesh, and is in per-

fect health, with not a sign of his former genito-urinary trouble.

November 12th, 1876.—A grateful letter received, in which he, my patient, says: "I write to tell you that *I am in the very best of health.* My old enemy, conquered at almost the moment of victory, has taken his place where memory alone can reach him. Literally, I weigh 142 lbs., and am well." The last report from this patient was in 1881 at which time there had been no recurrence of his urinary trouble and he was in good general health.

In concluding the report of this remarkable case, I will only say, that it is in the line of my experience and observation, to find strictures at the meatus, and anterior portion of the urethra, associated with all the symptoms of deep organic stricture. In my article on Spasmodic Strictures, published in the *Archives of Dermatology*, Vol. 1, No. 3, (1875,) several such instances will be found. The foregoing case exemplifies, in a striking manner, the influence of anterior contractions in producing and perpetuating spasmodic stricture, of a character *identical in every respect* with true organic contraction of the deep urethra, and which, as shown in the above case, resists every form of treatment, which does not include complete restoration of the anterior portion of the canal, to its normal dimensions.

CASE II.—"Bernard O. C.,* æt. thirty-five; was admitted July 31, 1878. Patient had gonorrhœa nine years ago, the discharge becoming gleet and lasting for six years. In the fifth year of the disease he had a perineal abscess, which healed after remaining open for ten weeks. Other formed at the same site about four weeks before admission, having a fistula which had not yet closed. When admitted he passed stream of urine about size of knitting-needle. Examination of urethra detected obstruction about five inches behind meatus, admitting only filiform bougie. At the same point, steel sound

* This case was reported by the late Dr. C. M. Allin to the Medical and Surgical Society of New York in 1878, and published in the *Hospital Gazette* of June 28, 1879, in the author's controversy with Prof. H. B. Sands on spasmodic stricture. Cases III. and IV. are also from the same,

No. 25 f. entered what appeared to be a false passage. High fever, with thrombosis of left femoral vein followed this examination, and no further mechanical treatment was undertaken until Sept. 26, when the deep stricture was found impassable to filiform bougies. The perineal fistula admitted a probe, which passed about an inch upward and backward toward the bladder. Sept. 28: Operation. Patient ætherized. Flexible bougie No. 5 f., entered the bladder with difficulty, encountering resistance in the perineum; meatus which admitted No. 25 f., incised, and with No. 22 f. strictures diagnosed at $2\frac{1}{2}$ and $4\frac{1}{2}$ inches from meatus. These were cut with the dilating urethrotome to No. 37, *after which sound No. 35 passed without difficulty into the bladder."*

Another case, occurring in the service of Dr. Geo. A. Peters, and extracted from the records of the New York Hospital:

CASE III.—F. Whitehead, 33, April 20, 1878. Twelve years ago had gonorrhœa, followed by stricture. Relieved by bougies. No trouble until three years ago. Then gradual decrease in size and force of stream—spiral. Past year urinated only drop by drop. Before operation meatus admitted 18 f. to $3\frac{1}{4}$ inches; 14 f. passed through this to $4\frac{1}{2}$ inches. Beyond that only filiform passed, with difficulty. Internal urethrotomy by Dr. Peters, April 26, 1878. Etherized. Meatus slit with bistoury. Urethra injected with olive oil and measured. Filiform passed into bladder, followed by Maisonneuve's director. Urethrotome (blade) with cutting capacity of 12 mm. passed, dividing only anterior stricture. As No. 25 f. would not pass the $4\frac{1}{2}$ stricture, Maisonneuve again introduced. After which No. 25 F. passed down to 6 inches and stopped. Beyond this only No. 15 f. flexible passed.

Otis's urethrotome introduced, dilated to 40 mm., and anterior strictures divided, when No. 36 f. passed, without any difficulty into bladder, *showing that obstruction at 6 inches was only spasmodic and depended on strictures of large calibre, and anteriorly."*

Another case, this in my own practice:

CASE IV.—Mr. D. J., planter, aged 35, was referred to me June 19, 1877, by Drs. A. Y. P. Garnet and N. S. Lincoln, of Washington, with the following history. First and only specific urethritis in 1865; severe at the outset, but soon painless, and from that time has never been quite free from a urethral discharge. Two years after, [1867.] began to appreciate a lack of force in urination with dribbling after the act. In 1867-'68-'69 was in the railroad service, which aggravated his trouble. Nothing serious, however, until 1871, when after an enforced holding of his urine for several hours, he had an attack of retention. This, after eight hours of suffering, was reduced by the introduction of a catheter. No especial trouble again, except frequent urination, until in 1874, when, after overwork and neglect he had a second retention 12 hours—relieved by anodynes. Another a week subsequent, his physicians attempted to pass catheter, but failed; bled him from the arm *ad deliquium*, when he urinated. After this retentions were frequent, accompanied by severe vesical tenesmus, which finally produced prolapsus of rectum, great pain in region of bladder and kidneys during attacks of retention, also severe pain in the eyes, from straining. Repeated and prolonged efforts, by various medical men to introduce a catheter, failed in every instance. Urination now every half hour and small in quantity, and inability to completely empty the bladder. This last *became much distended, and remained so*, notwithstanding frequent urination in small quantity. Suffered much from straining, in attempts to urinate, during subsequent time, up to Feb., 1877. Although repeated trials had been made by various surgeons, no instrument had been passed into the bladder since 1871, and, for previous three years, bladder habitually distended; protuberant.

At this time, a surgeon proposed to dilate his stricture, which was supposed to be in the deep urethra. No. 14, steel sound, after gentle and prolonged efforts, every morning for three weeks, preceded by a hot hip bath, was finally passed into the bladder. About a pint of urine followed the withdrawal of the sound. To this

succeeded strong and painful twitchings of his limbs and severe pain in hips and over kidneys, also buttocks and thighs. This was followed, very soon, by a severe chill and fever and sweating. A similar attack of fever came on for four days succeeding, and he did not recover his usual health for five or six weeks. After this, any unusual fatigue brought on chills. May 19, 1877, he went to Washington, and came under the charge of Dr. Garnet. A careful attempt to introduce a small catheter failed. On the 22d, four days after, Dr. G. associated Dr. Lincoln with him, and the patient was put under the influence of chloroform and ether and careful, persistent, trials were made with a variety of instruments to enter the bladder, all of which were resisted. The bladder was then aspirated and over a quart of urine drawn off.

On the 31st, efforts under anæsthesia were again made, for three-quarters of an hour, with result as before. Bladder again aspirated, and about the same amount of urine drawn as before.

On the 5th of June another attempt under same conditions. Same result. On the 10th, again; three pints drawn off. On the 17th, same.

Thus all efforts which appeared judicious were made to enter the bladder, and the bladder was aspirated five times during the month. In the intervals the patient was out and able to take a little exercise, urinating every hour about a teaspoonful, sometimes with ease, at others with straining. Since August, 1876, has not been able to retain his urine when standing, and has worn a urinal habitually. Occasionally complete retention would occur, when, after application of hot cloths for a few hours, relief in the usual small degree would come. He left Washington for New York on the 20th of June, 1877, having been last aspirated on the 17th. During his railway journey he urinated with unusual ease and freedom, but had an attack of retention on his arrival in New York, which was as usual relieved by hot cloths. This was the history given to me by the patient. He was tall, spare, with an expression of habitual suffering and irritability. Examination showed a large penis, measuring $4\frac{1}{4}$ inches in circum-

ference; meatus small and pouting; bladder protuberant and dull up to within an inch of the umbilicus. No enlargement of the prostate.

Examination with the urethrometer. This was carried into the bulbo-membranous junction, and turned without discomfort up to forty. Clear to this size for three inches, then required to be turned down to twenty-eight. Three bands of stricture of 28 were recognized within an inch. The urethra was then found free from that to within half an inch of the meatus, where it was twenty-five m.m. to the orifice. The history of the patient presented some points so similar to that of the case of chronic spasmodic stricture of seventeen years' duration (cited at page 470 et seq.), that I felt strongly inclined to consider the deep stricture, which was evidently in the membranous urethra, as spasmodic. I resolved to test this. I made no attempt to introduce an instrument into the bladder. Under the influence of the nitrous oxide gas, administered by my associate, Dr. Bangs, I divided the meatus urinarius to 40 F., and in order to test the influence of this procedure I did nothing else.

On the following morning, the patient announced that he had since the operation made his water more easily than for three years, but the amount was small, and the bladder was not perceptibly diminished in size. This result made me still more confident of the spasmodic nature of the deeper obstruction. On this day, June 23d, 3½ P.M., Mr. D. J. was placed fully under the influence of ether, and with the dilating urethrotome I divided the strictures, all of which were anterior to 4 inches (the smallest 25 m.) up to 42 m. I then passed what I supposed to be a 40 solid steel sound *with ease through the urethra and well into the bladder* simply by its own weight. I then passed a very large gum catheter and drew off two pints of urine. Dr. Bangs now called my attention to the fact that the first instrument passed was only 36. I then took No. 40 and passed it with perfect ease well into the bladder. Slight hæmorrhage followed the operation. No chill. At one o'clock A.M., Mr. J. got up and urinated in a large

stream, with complete ease, passing a full pint of urine and *completely emptying the bladder*.

From this time he had no further trouble, except the slight discomfort of urinating over the cut surface for a few days until it healed. At the end of a couple of weeks, he was to all appearances, and as he said, "as well as ever in his life." He remained practically well for nearly a year, when he returned with some difficulty of micturition, but had had no retention or pain.

Examination showed a recontraction of the meatus to 34, also two bands, one at $3\frac{1}{2}$ and the other at 4 inches, also 34.

He was put under ether, and the recontractions fully divided. An attempt to pass a full-sized instrument was then made. No. 40 solid sound went easily to the bulbo-membranous junction, but was arrested there. No force was used. No. 36 was then tried in the same manner, gently and patiently. The same result both with and without a pressure in rectum. Then No. 30 was tried in the same way, then No. 20, then 10, finally down to fine filiform bougies in variety. This procedure occupied nearly an hour without success, when it was decided to make no further effort until healing of the wound had taken place, and all possible irritation from this source had ceased.

The patient passed a good night; no chill; urinated three times with ease. The stream gradually decreased in force, however, for the next five days, when on Sunday, April 28th, 1878, he called at my office. Urinated in my presence in a slow, hesitating stream, but without pain. Placing him in the recumbent position on a lounge, I attempted to pass a No. 5 filiform bougie. This, after a few minutes of gentle effort, slipped quickly and easily into the bladder, and then suddenly became *tightly hugged*. Recognizing this as a rare example of unmistakable spasmodic stricture, I at once sent for my distinguished surgical friend and neighbor, Dr. George A. Peters, to verify the correctness of my conclusions. Dr. Peters came, and appreciated the facts above stated, especially the distinct grasping of

the filiform bougie by the compressor urethræ muscles. Dr. P. withdrew the bougie with some difficulty. No farther procedure was instituted. On the following day, the patient complained of great nervous prostration, which, as he stated, came on soon after the withdrawal of the filiform the day previous. This, however, passed off during the day, and nothing worthy of note occurred until May 4th, when the wound of operation having healed, it was decided to anæsthetize the patient, and again attempt the passage of a sound. Dr. Bangs, my associate, and Drs. J. H. Swasey and W. T. Spencer were present. After bringing the patient to unconsciousness, although some spasmodic movement of the limbs was present, I attempted to pass a large sound. In this I failed. Smaller and smaller sizes were tried, until the small filiform, patiently used, was resisted. I then directed the patient to be put as thoroughly as possible under the influence of the anæsthetic. In about ten minutes, complete muscular relaxation took place for the first time. I then again took up the solid sound, No. 38, and passed it with ease well into the bladder. This was readily followed by No. 40. Urination with ease in full stream four hours after the passage of the instruments. Day following, urinating well; feeling well; temp. $101\frac{1}{2}$. Record of May 13th says "Mr. J. feels well—vesical catarrh (from which he has been suffering for several weeks) declining. Makes his water readily in a full, strong stream every four or five hours." Before leaving for his home, Mr. J. was anxious to have another passage of the large instrument, and this was done without difficulty. It was followed by a severe urethral fever, however, which lasted for several days, prostrating him very much, but his urination was easy and natural, not oftener than once in five or six hours, and thoroughly emptying the bladder. He gradually improved in his general health, and left for Washington about the middle of May. About a week after, he wrote that he had had some return of his urinary difficulty, but was going South. A few months later, I received a letter from him commending a relative to my care. Since then,

although I have addressed a note of inquiry to him, I have not yet heard in regard to his condition.

The foregoing cases appear to me to prove, not only the reality of that form of chronic spasmodic stricture, which I have (from its analogy to *vaginismus*), venture to term "Urethrismus," but they also demonstrate its dependence upon anterior strictures, or even less prominent causes of irritation.

They demonstrate the fallacy of the claim that spasmodic stricture may be readily distinguished from organic stricture, and that the administration of ether necessarily causes the complete relaxation of reflex spasm.

LESSON LVII.

REFLEX IRRITATIONS THROUGHOUT THE GENITO-URINARY TRACT.

Reflex irritations now generally accepted as a cause of varied painful affections—Confirmation of this by eminent authorities—Incontinence of urine caused by contracted prepuce—Clinical cases in illustration—Incomplete erections, nocturnal emissions and various other troubles caused by phymosis—Dittels' case—Pitha's—Dr. Black's case of sympathetic irritation—Syncope caused by introduction of a catheter—Such accidents not rare—Dr. Brown-Sequard's case of supposed cerebral ramollissement caused by reflex irritation initiated by a contracted prepuce—Dr. Sayre's cases showing the pernicious influence of contracted prepuce—Cases by Sir Henry Thompson showing the influence of a contracted urethral orifice—Civiale's views on the influence of urethral contraction in producing varied reflex disturbances.

The influence of the irritation of peripheral nerves in producing centric disturbance in the spinal cord, which may thence be transmitted to distant parts of the animal economy (first claimed by Dr. Marshall Hall more than twenty years ago), has found corroboration in the testimony of every medical scientist since his time; and besides, so much clinical proof has been accumulated by the medical profession at large in support of this proposition that it is no longer a matter for discussion. Morbid reflex disturbances are now accepted as occupying an important place in the recital of human suffering.

Varied and grave disturbances, influencing the entire nervous system, are often ascertained to be dependent upon so apparently insignificant a cause as a decayed tooth, an indigestion, a simple erosion upon the cervix uteri, ceasing at once on the cessation of the cause. Dr. D. Campbell Black, of Glasgow, in his very interesting and valuable work on the renal and urinary organs, cites cases of retention of urine from reflex irritation, the result of an operation for hæmorrhoids. Trousseau has recorded cases of incontinence of urine

dependent solely upon the irritation caused by a preputial contraction. Dr. Sigismund Waterman, of New York, has shown me a case of this sort, which was promptly relieved by division of the prepuce. I have seen other similar cases, and also one marked case of *retention* of urine in an infant nine months old, which, after lasting four days, was completely relieved within one hour by slitting up the prepuce. Seminal emissions are well known to occur as a result of phimosis, relief occurring promptly on ablation of the prepuce.

Dittels relates a case where a man twenty-six years of age had a slight phimosis, and was the subject of incomplete erections, nocturnal emissions, frequent desire to urinate, and also of many hypochondriac symptoms, all of which were promptly and completely cured by removal of the prepuce.

A similar case is related by Pitha. Sweigger-Seidel cites a case where the simple introduction of a catheter caused complete syncope, and yet no urethral disease was present. I have the record of a similar case where complete unconsciousness instantly followed the introduction of a bulbous sound through the meatus urinaris. Every surgeon of much experience has recognized the tendency to syncope in a considerable proportion of nervous patients, on the first introduction of instruments through the meatus.

Spasm of the bladder is noted by Dr. D. C. Black as occurring from sympathetic irritation, and to a degree, resulting in the complete closure of the orifices of the ureters, producing retention of urine in the ureters and pelvis of the kidneys. Such a case I believe I have seen, resulting in death from uræmia, and caused by the rude introduction of a catheter, through a narrow stricture at the posterior border of the fossa navicularis. Forcible and painful contraction of the bladder followed immediately, with complete suppression of urine. The patient died uræmic twenty-four hours after. The bladder was found empty (with the exception of a few drachms of grumous blood and mucous), closely contracted and free from disease. The ureters were normal, the kidneys highly engorged with blood, but pre-

senting no evidence of disease. The case was accepted as one of *acute suppression* of urine. The ureters are known to contract vigorously under the influence of the galvanic current. The above case,* it now seems to me, was one of spasm of the ureters and bladder, reflected from the irritation of the end of the penis.

Dr. Brown-Sequard, in the year 1874, related to me the following case:

"While in London, during the past year, a gentleman was brought to me who presented all the rational signs of advanced cerebral *ramollissement*. I had looked upon the case as quite a hopeless one, until noticing that the patient frequently applied his hand, in an absent sort of way, to his genital apparatus. Permission being accorded, examination of the parts revealed an aggravated inflammatory phimosis, complicated with acute balanitis. On making this discovery," said Dr. Brown-Sequard, "I expressed to the medical gentleman accompanying and in charge of the patient my belief of the possibility that the *apparent* ramollissement might be due to reflex irritation, caused by the evidently chronic and severe irritation of the glans penis. I advised complete division or ablation of the prepuce, and treatment of the balanitis, as the best and only hope for the patient's recovery from the brain trouble from which he was suffering."

The operation was performed, and the effect upon the mental and physical condition of the patient was almost immediate. "So rapid was his recovery," said Dr. Brown-Sequard, that within six weeks from the date of the operation, he presented himself at my office perfectly well in every respect."

Dr. Sayre, of New York, in the Transactions of the American Medical Association for 1870 has reported several cases of partial paralysis of the lower extremities, associated and evidently dependent upon adherent and contracted prepuce. One was of a boy five years of age, unable to walk without assistance, or to stand erect—his knees being flexed at an angle of forty-five

* Reported to the New York Pathological Society, March, 1872.

degrees. The operation of circumcision was performed on this lad by Dr. Sayre, and "from the very day of the operation the child began to improve," and without other treatment made a rapid and complete recovery. In a second case, a lad of fourteen years had been under treatment for paralysis of his legs for several months without marked improvement, when it was found that a contracted and adherent prepuce was present, causing great local irritation, dysuria, and painful erections. The preputial contraction was recognized as a possible important factor in causing the paralytic trouble. Circumcision was performed, resulting in complete recovery from the paralysis in six weeks.

Sir Henry Thompson says :* "I have given complete relief to distressing symptoms of very long continuance, *the cause of which was not suspected*, by dividing an external meatus, which, nevertheless, admitted a No. 6 English catheter. I have met," he further states, "with three marked examples of a similar kind, in which the very simple operation necessary was followed by *complete disappearance of urinary difficulties, which had been long regarded as of an extremely obscure character.*"† He cites a single case: "J. J., aged thirty-four, a gentleman whom I had visited at the request of his medical attendant, in the spring of 1857, had been suffering from painful, prolonged, and frequent micturition for five years previous. He was compelled to pass water from three to five times every night, and every two hours during the day; experienced severe pains in the back and loins, and general ill health. Urine was purulent, alkaline; results of habitual retention and partial engorgement of the bladder. He had been treated for renal disease without any good effect. On examination I found a simple narrowing of the urethral orifice, and marks of previous ulceration in a small cicatrix. I learned," says he, "that he had had chancre seven years, before, which involved a large portion of the meatus, after the healing of which his present symptoms almost

* "Stricture of the Urethra," second edition, p. 249.

† Op. cit., page 253.

imperceptibly appeared. A probe only passed through the opening. I divided the contraction so as to make a free opening. A No. 10 catheter was passed easily into the bladder, demonstrating that there was no other obstruction, and twelve ounces of urine were drawn off, although he had passed water just before. The relief was almost instantaneous—in a week it was complete. He has had perfect immunity from his urinary complaints ever since."

The following quotations are from M. Civiale's "Traité Pratique des Maladies Génito-Urinaires, 2, Paris, 1850."

At page 45 et. seq. of this work, M. Civiale writes thus: "*Independent of its local sensitiveness, the urethra possesses another kind which may be termed sympathetic. . . . When this sensitiveness is aggravated, it may awaken sympathetic response in every organ and function of the body. . . . In many cases sympathetic (reflex) phenomena were manifest in the lower extremities, particularly in the soles of the feet.*"

Again, at page 354 et seq. "It is not rare to observe that slight encroachments upon the urethral calibre induce marked difficulty in micturition; those at the meatus having this effect not less than those located farther in."

Again, at page 160: "Strictures seldom exist for a long time without exciting a series of disorders of the genito-urinary functions, and, consecutively, in remote parts of the body. . . . Among these, gleet, retention of urine, difficult micturition. . . . That which has struck me forcibly in dividing a meatus, only slightly contracted, is the sudden and complete change effected in the general condition of the patient. The constriction, which seemed hardly to impede the flow of urine, is no sooner divided than all morbid symptoms vanish: *the urethral walls which were rigid, hard, and inelastic*, immediately recover their normal condition; the bougie, which at first passed only with difficulty and pain, slips into the bladder with ease, and in five or six days the slight incision in the meatus heals perfectly, and the patient finds himself in a state so satisfactory, that it would be incredible, but for the fact that the

instances are again and again repeated. An effect so prompt through means of which the significance is plain, shows that *the slightest obstruction in the urethra is able to produce the gravest symptoms local and general.*"

By the cases already cited, and many others scattered through the periodical literature of the past few years, and the positive testimony of the great French surgeon, M. Civiale, in support of the capacity of such obstructions to produce reflex irritations in great variety, it is sufficiently shown that paresis, more or less pronounced, may result from irritations reflected through peripheral nerves, without any coincident morbid change in the structure of the spinal cord, and that incontinence of urine, retention of urine, suppression of urine, involuntary seminal emissions, may, in the same manner, result from irritation at the *extremity of the glans penis*. The case of simulated cerebral *ramollissement*, related by Dr. Brown-Sequard, occurring as a direct sequence of like irritation, indicates the wide range of sympathetic disturbances which may be initiated by simple inflammatory action at this point. Now, aside from the fact that the glans penis is known to be extraordinarily rich in sympathetic nerve cells, that it is the recognized initial point from which the physiological sexual excitement is transmitted throughout the male genitalia, the records of clinical experience abound with evidences of the capacity and proneness of this especial region to produce reflex disturbances, often of a grave and lasting character, throughout the entire nervous system. Notwithstanding these facts, I believe that the full significance of this locality as a source of reflex irritations along the genito-urinary tract has not yet been appreciated; and, further, I am convinced that many heretofore obscure difficulties and diseases of the genito-urinary organs may be distinctly traced to the locality of the meatus urinarius as the source of their initiation and continuance.

LESSON LVIII.

CLINICAL CASES IN ILLUSTRATION.

Clinical cases in the author's experience—Case I.—Irritation at neck of bladder cured by division of a contracted meatus—Case II.—Great nervous irritation cured by a similar operation—Case III.—Spasmodic stricture caused by contracted urethral orifice, cured by its division—Case IV.—Imperfect erections—Despondency and nervousness dependent upon contracted meatus—Cured by its division—Case V.—Intense irritation in the urethra and at the neck of the bladder promptly cured by division of a contracted orifice—Repeated re-contractions—Followed by return of trouble—Repeated operations finally resulting in permanent cure—Case VI.—Pain on seminal emissions—Gleety discharge—Acute cystitis—Frequent micturition cured by division of stricture.

CASE I.—A. Y., physician, aged twenty-eight, contracted first gonorrhœa November 20, 1873. Severe—lasted four weeks; treatment by alkalies, internally; continued application of cold, and mild injections. Was then under my care. I noticed, on examination, that his penis was large and the meatus small, and called patient's attention to this fact when he first presented for advice, and assured him if he did not have a fair recovery, it would be necessary to enlarge the meatus.

January 19. Patient presents, with gleety discharge without known cause, great irritation at the neck of the bladder, and frequent desire to urinate; is certain that his former disease was imperfectly cured, and that it has come forward from the deep urethra to which it had extended in his original clap. I reminded him of his contracted meatus; he is certain he needs deep injections, but submits to operation for enlargement of meatus. Cut it to 30 f.,* after which 30. f bulb passes

* Wherever in the course of this work the letter f. occurs, following a number it indicates millimetres circumference on French metric scale

throughout the canal with ease: to keep the incision open until healing is complete.

January 24. Patient reports immediate cessation of irritation in the perineal portion of the urethra on division of the contraction. The discharge ceased within forty-eight hours, and he has had no trouble since.

CASE II.—September 10, 1872, Mr. W., a Swede silk-weaver, was brought to me by his medical attendant, complaining of pain and general discomfort about the perineum, and especially of a nervous uneasiness in that region and in the glans penis, which prevented him from pursuing his avocation; he could not sit still. Had had a gonorrhœa several years previous. Had been treated for stricture by dilatation for several months, but without relief. Examination showed a narrow meatus, No. 20 f. Stricture at two and a half inches, defined by 18 f. A free division of the meatus was made with Civiale's *bistourie cachée*, and of the stricture with the dilating urethrotome; 27 f. passed readily through: to be kept open by daily introduction of sound until healed.

September 20. Patient reports entire cessation of the irritation and nervous feeling immediately following the operation, but this returned yesterday. Examination shows recontraction of the meatus to 20. Cut again freely.

November 16. Patient again called, with the statement that he had been able to work until the day previous, when the irritation again returned, and he desired to be cut again. Examination showed a recontraction at the meatus to 24. Cut again, and introduced 30 f., which passed easily through the site of stricture at two and a half inches, and down to the bulbo-membranous junction. This patient called two months after (January 20), and had had no return of his trouble—no recontraction of meatus.

CASE III.—Mr. W., aged twenty-seven, had gonorrhœa in 1870, lasting one month, when a fresh exposure resulted in another attack, which lasted, under a sharp fire of injections, for six months longer. Since that

time, has always had a return of the discharge after connection. Has been under treatment for stricture by several physicians, but none succeeded in entering the bladder. His last medical attendant, after treating him for a couple of months, said that he had no instruments small enough to pass, and advised him to put himself under my care. Examination (April 16) showed organ unusually well developed, meatus contracted to 24 f. and red and pouting, and bathed in a muco-purulent discharge. Twenty-four sound is arrested at five inches; only fine filiform will pass, and that is closely hugged.

April 19. Pass filiform with ease, follow with No. 10, and then, with some effort, with No. 16 f. after this the filiform is again closely hugged in the membranous portion; divided the meatus freely, and introduced No. 30 steel sound, which passed literally by its own weight down through into the bladder, thus proving not only the spasmodic character of the deep obstruction in this case, but its entire dependence upon irritation caused by the stricture at the meatus.

CASE IV.—October 30, 1873. J. W., thirty-two, had gonorrhœa ten years ago, very severely, lasting, with pain and difficulty of micturition, fully six months. After being apparently well for three years, a gleet discharge appeared without new exposure. Masturbated daily from fourteen years of age to twenty, when he abandoned the habit. At twenty-six began to have nocturnal emissions, which, growing gradually more frequent since the last two years, have occurred almost nightly. He has had occasional sexual intercourse. Erections have been imperfect for last eighteen months, ejaculation taking place before the erection was complete. He has suffered much from despondency and nervousness. Has had no treatment except for general health, which much of the time has been indifferent. Examination shows genitals well developed and apparently normal, with the exception that while the circumference of the flaccid penis is three inches, the meatus is contracted to 22 f. (the size of urethra in a

penis three inches in circumference is, as a rule, fully 30f).*

November 1. Divided meatus thoroughly, and passed 31 bulbous sound readily through contraction.

November 11. Has had no emission since date of operation.

December 1. Found himself getting so much better in spirits and feelings generally, that he ventured to marry on the 25th. Since that time he has had no trouble of any sort. *Considers himself a well man.*

CASE V.—Mr. W., aged twenty-five, came under my care † December 1, 1872. Contracted first gonorrhœa early in June, 1872. Was treated by the use of injections locally, and alkalies internally, until August 1st, during which time he had no freedom from the discharge nor from acute suffering. About this time the vesical neck became involved, and he suffered much from frequent painful micturition. Came then under the care of a skilled endoscopist, who discovered numerous spots of granulation in the course of the canal, extending quite into the prostatic portion, and applications of a strong solution of nitrate of silver were made through the endoscope, which gave temporary relief; urination still painful every hour.

By September 1st, after the use of pencils of tannin and glycerine, discharge decreased to a slight mucus. A spell of damp weather brought back the purulent discharge, with return of perineal pain and frequency of micturition. Tannin pencils again used, but after continuing for four weeks, and no improvement, patient was put to bed, and hot hip-baths every two hours, etc.

* I have recently operated for congenital contraction of the meatus in a child ten years old, where the circumference was two inches. After the operation 22 f. was passed easily through the urethra.

3½ inches indicates urethral calibre	32 f.
3½ " " " "	34 f.
3¾ " " " "	36 f.
4 " " " "	38 f.
4½ " " " "	40 f.

† Case V. and also Cases X. and XI. were published by me in Dr. Brown-Sequard's "Archives of Medical Science," 1872, page 152, et seq.: "Cases of Stricture of the Urethra of Large Calibre, producing Reflex Irritations, etc."

After five weeks of this treatment and various other, local and general, he came from his bed to me, December 1, 1872. On examination, I found no difficulty in introducing No. 20 f. bulbous sound, and discovered a firm cartilaginous stricture, extending from just within the meatus, one-half inch back. This I cut freely with Civiale. Immediately following the operation, he expressed himself as feeling "like a new man." In his written report of the case (he was a physician), he stated that, "on the division of the stricture, the relief *was wonderful*." The discharge ceased within twenty-four hours, the perineal pain and frequency of micturition and the ardor urinæ also ceased, and he returned to his hospital duties, which were most active, on the following day (after having been laid up for over five months). The prostate, which I found double its normal dimensions on the first visit, is now found to be reduced in size fully one-third. The complete cure in this case was delayed by repeated reconstrictions, which finally necessitated a division up to 40 f., after which he had no further trouble. He was married several years since, and now, May 1883, has several children, and is in every respect free from his former troubles. It is interesting to note that the stream of urine after the final operation, was compact and strong, and could be propelled easily a distance of three feet.

CASE VI.—Mr. B., aged forty, from early boyhood has had more or less irritation of the urethra, usually referred to the region of the meatus urinarius. Twelve years since, he had an attack of gonorrhœa, which continued for nearly a year, in spite of a variety of treatment. Suffered much during this attack, especially with pains in the glan penis. After a continence of several months, on having sexual intercourse, found the act of seminal emission accompanied by an intense burning pain, extending through the perineum and lasting for half an hour, described like red-hot lava running over a raw surface. On subsequent similar occasions, finding the same result, his physician being consulted, called it a sexual weakness, and treated him by introduction of bougies. This failing to afford relief, he es

chewed sexual indulgence entirely. Occasionally nocturnal emissions were accompanied and followed by the same pain previously referred to, but less severe than in connection. In June, 1873, after seven years of continence, he noticed a slight gleety discharge from his urethra, with pain in the glans penis, aggravated by motion, walking, or riding. After a variety of opinions by various surgeons as to the nature of his complaint, it was finally decided to be a stricture of the urethra, and was treated by the semi-weekly introduction of bougies. His stricture was supposed to be in the deep portion of the canal, and after six months of treatment, his urethra was said to have been raised in calibre from 8 to 11 of the English scale. He then had an attack of acute cystitis, lasting two or three weeks, and since that time he has been subject to frequent trouble in micturition, frequency, and pain along the urethra, especially at the glans penis, and "*a feeling of wetness*," as the patient describes it, "that is depressing in the extreme." He also had weekly seminal emissions. Examination in this case showed full development of penis. 26 f. defined stricture one-third of an inch from the meatus. Examination of bladder fails to detect any calculus. No evidence of contraction at any other point in the urethra with No. 21 f. bulb. I divided the stricture at the meatus, and passed 30 f. solid steel sound, *easily through the urethra and into the bladder*. This was in July, 1873. The operation was followed by immediate relief from pain and frequency of micturition. The discharge soon ceased, a gradual improvement took place in regard to the pain after emission, for several months, when it began to return, and also some of his vesical irritation. Examination revealed a recontraction of the stricture. This was again divided, and the patient soon after wrote me that he had done well since the last operation and was entirely relieved of all his most troublesome difficulties, but an occasional feeling of irritation in the perineal region, induced him to think that slight recontraction might have again recurred, and he proposed to return at some convenient time for examination upon this point.

LESSON LVIX.

CLINICAL CASES IN ILLUSTRATION OF REFLEX IRRITATIONS CONTINUED.

Case VII.—Irritability of the bladder—Frequent urination—Pain following sexual connection—Feeble stream in urination—All promptly relieved by division of contracted meatus urinarius—Case VIII.—Incomplete erections—Involuntary emissions—Premature seminal discharge cured by division of meatus—Case IX.—Pain in back—Hypogastric region—Groins—Testicles—Inner side of thighs and knees—Also slight accumulation in tunica vaginalis of both sides (hydrocele) promptly cured by division of meatus urinarius—Case X.—Retention of urine from spasmodic stricture and cystitis—Cured by division of meatus and deeper stricture.

CASE VII.—Mr. S., aged forty-five, has had gonorrhœa twice, followed each time by a gleet lasting many months, finally cured by introduction of steel sounds. He had several attacks of irritability of the bladder since first attack of gonorrhœa, and long ago noticed that this was affected by the use of any alcoholic stimulant, and also that he did not completely empty his urethra after micturition. To effect this, he was in the habit of pressing his finger along the urethra, from the perineum. Unless he did this, a sense of irritation in the canal and a desire to urinate, would come on in a few moments. Complained of feebleness in making water after a week or two of continence. On having connection, the stream was at once greatly improved. Any sexual excess was followed by pain in the perineum. His trouble now thought to depend on spasmodic stricture, and large sounds advised. In order to admit them, it became necessary to incise the meatus. This done, 32 f. was easily introduced, but not continued as contemplated, as all trouble passed off in a few days. A few months subsequently, however, his old troubles returned, and were not relieved by the use of the sound. At this point he came under my care. Penis found to be four inches in circumference, which

would indicate a capacity of urethra of at least 38 of the French scale. No. 28 bulbous sound detected contraction at the meatus. This was freely divided, with the immediate result of relieving the irritation of the bladder, and in a short time pain following connection had almost entirely disappeared, and the stream of urine was increased in force, and the ability to empty the canal much improved.

CASE VIII.—Mr. Z., aged forty-six. Regular and chaste in habits until going to China twenty years since. Following the custom of foreigners in that country, he indulged excessively in sexual intercourse for several years. Had a single attack of gonorrhœa, from which he recovered completely in a few weeks. For the last few months he has been troubled with involuntary emissions as frequently as once a week, and latterly, in his attempts at sexual intercourse, he has failed, on account of the seminal discharge having occurred before the erection was complete. He feels quite certain that his genital apparatus is less in size than formerly. Examination shows penis of normal size, three inches in circumference and three in length; some enlargement of the left spermatic veins; testes soft, full size, left largest; meatus urinarius contracted to 22 f. On introduction of the bulbous sound through it, as it was quite unyielding, it required some slight pressure, and as it suddenly slipped into the fossa navicularis, a regular spasmodic retraction of the penis occurred at intervals of three or four seconds (retraction about a quarter of an inch), and continuing during the half minute that the instrument was retained, and continuing with rhythmical regularity for three or four minutes after its withdrawal. The result of the introduction of the sound was repeated several times at that sitting, the intervals between the contractions gradually lengthening, until an interval of five or six seconds occurred, when it ceased. These movements, so evidently of reflex origin, suggested the dependence of his seminal troubles on the same cause. I therefore divided the meatus thoroughly, and introduced thirty-one sound without difficulty through the urethra.

After the operation, the introduction of the thirty-one bulb failed to excite any spasmodic contraction of the penis, nor in frequent subsequent experiment was I able to reproduce this phenomenon. An immediate improvement in the general condition occurred. His involuntary emissions ceased without other treatment, and in six weeks after the operation he informed me that he had entirely recovered his sexual powers.

CASE IX.—I. W., aged thirty-four, came to me in September, 1873, complaining of frequent seminal emissions, one or two every week, pains in the lower part of the back, in the hypogastric region, in the groins, running into the testicles and extending down the inner aspect of the thighs to the knees. He was of chaste habits up to some four or five months previous, when he became engaged to be married. After this time he was the subject of frequent and prolonged venereal excitement and ungratified desire. In a few weeks, involuntary emissions became frequent and finally painful, with suffering for some time after. Gradually the previously described pains of the back, hypogastrium, groins, testicles, etc., came on, resisting all treatment by his family physician until the present time. I prescribed for him absolute abstinence from sexual contact, general care of diet, side position in sleep, cold ablutions, etc., and a mixture of bromide of potassium with the bromide of ammonium and tincture of ergot. December 3d, three months after (living several hundred miles distant), he came again to see me, with the report of an entire relief from the seminal emissions, but had had swelling of testicles, and still suffered from almost constant pain in the back, over pubes, in the groins, and, especially of late, in the testicles, extending down the thighs. Examination revealed a serous effusion into the *tunica vaginalis* of both sides; in the left some three drams of fluid; in the right rather more, and which backed well up to the external abdominal ring. The light test showed this fluid to be quite transparent. I at first thought of treating it as an ordinary hydrocele, by withdrawing the fluid; but on finding a meatus, situated on the superior aspect of the glands, contracted to

15 f., and holding the bulb for fully one third of an inch, and further finding that he had long been troubled with dribbling after micturition, I explained to the patient the possibility of all his trouble arising from this congenital deformity. He promptly consented to an operation, and I divided the contraction thoroughly, passing afterwards a thirty-four steel sound through the urethra. (Circumference of penis three and a half inches.) Several sensitive points were recognized by the patient during the passage of the sound, indicating a granular condition of the mucous membrane. Immediate relief of the pain in the testicles and down the thighs followed the operation. Within a month all trace of fluid in the *tunica vaginalis* had disappeared; he had had a single nocturnal emission without pain, and with the exception of a feeling of nervous anxiety through the hypogastrium (which came on occasionally), and some pain in his back, after general fatigue, he was quite recovered from his troubles. No internal remedies were made use of subsequent to the operation. Subsequently this patient married, had several children, and has continued well up to the present time, May, 1883.

CASE X.—Mr. De F., aged forty-three, came under my care in March, 1867, suffering from retention of urine following a debauch. As no great amount of urine was present in the bladder, I gave him *mur. tr. ferri*, advised a hot bath, and left him. On the following morning he expressed himself free from any trouble, and declined an examination of the condition of his urethra. In December, 1871, he again presented, complaining of incontinence of urine. He was also suffering from intermittent fever (which I suspected was due to his urinary trouble.) Said he "made his water freely, but could not hold it." I found some accumulation in the bladder. As the patient lived out of town, I made no examination, but advised him to make arrangements to come in town on the following day for treatment.

He did not present again until November 30, 1872, when he came with the statement that he had then lost

all control of his urine ; had had none for the past year. On the day previous, while riding, he noticed a swelling in the perineum, and "wished it looked after." Examination revealed a firm elevation of the left of the raphé, one and a half inches in diameter at the base, and about an inch in elevation, extending from just behind the anterior border to the anus to the junction of the scrotum with the perineum ; solid, resilient and painless ; no constitutional disturbance ; temperature, $98\frac{1}{2}^{\circ}$. On examination of the urethra, expecting to find a deep, tight stricture, I was surprised to find myself able to pass No. 13 f. catheter into the bladder, and to draw off a full pint of fetid urine, although he had just urinated. During the day the swelling increased, and interfered with the calibre of the urethra, so that I could only pass a No. 1 catheter into the bladder, and that with difficulty. Attaching this to Dienlafoy's aspirator, I drew off a pint and a half of urine. This, on examination, was found to be free from any evidence of organic disease of the kidney.

I then incised the tumor down through the superficial perineal fascia, and gave exit to a thin layer of pus, in quantity about a drachm.

It was only on the fourteenth day after (the swelling gradually subsiding) that urine was found flowing through the wound. In the meantime, the patient suffering from cystitis, his bladder was washed out with a double-channeled catheter, No. 20 f., which was passed without difficulty, although a perceptible clinging was recognized near the meatus. His bladder trouble increasing so that he made his water every hour, and it was loaded with pus. I urged an operation on the stricture, which, from the easy passage of the catheter, I had not before considered of much importance. Introducing bulbous sound, No. 20 f., I could not detect any stricture ; on its withdrawal it was arrested at a point half an inch from the meatus. Incising the stricture with the dilating urethrotome, which I introduced with some difficulty ; I then passed No. 30 sound, without obstruction, down into the bladder. On the following day I found that the frequency of evacuation of the

urine had decreased from *one* hour to *six* between the acts ; that the purulence had decreased, and that much less urine flowed through the opening in the perineum. From that time the patient continued to improve ; his control of the flow of urine was restored ; the purulence gradually disappeared, and within a week his perineal incision had healed, and he left for his home apparently well, not having had any treatment whatever since the healing of the wound at the point of stricture. Circumference of penis in this case, three inches. Up to the present time, May, 1883, (eleven years from date of operation) he has continued well.

LESSON LX.

Clinical cases continued—Case XI.—Chronic irritation of the bladder, and gleet—Division of stricture followed by complete cure—Patient continues, after thirteen years, to be free from urinary difficulties—Case XII.—Neuralgia of testicles—Spasmodic contraction of the cremaster muscles—Pain in the groins, extending to knees and feet—Cured by complete division of meatus and deeper strictures—Case XIII.—Irritation in glans penis—Gleet—Frequent desire to urinate—Suspicion of calculus—None found—Division of meatus urinarius affords prompt relief to gleet and to reflex irritations—Case XIV.—Lack of virility—Frequent seminal emissions—Imperfect erections—Sense of weakness in urethra—Dribbling after urination—Unceasing desire to urinate—Cured by division of contracted meatus.

CASE XI.—February 12, 1872, Mr. A., aged fifty, came under my care, through the courtesy of a professional friend, with the statement that he had been suffering from chronic irritation of the bladder, accompanied by a slight urethral discharge, more or less troublesome, for a period of five years.

He was thought by his physicians to be the subject of "gravel," and for a long time had been much treated, and was finally sent abroad, in the hope that entire change of habit and climate might afford relief. He returned somewhat benefited. Soon after (about three months previous to his visit to me), and subsequent to a season of prolonged exertion, physical and mental, acute irritation of the bladder recurred, with re-establishment of the urethral discharge, the latter quite like gonorrhœa, and was treated as such, although he had lived in the odor of marital sanctity for more than twenty years. Anti-blennorrhagics were administered with no benefit. Injections afforded only temporary relief.

The patient presented to me in usual general health; digestion good. He gave a history of an attack of gonorrhœa twenty-five years previous, which was treated solely by internal remedies. A profuse muco-purulent discharge was present. On urination the stream was

irregular and contracted. Meatus of moderate size, and admitted 18 f. bulbous sound; this was passed slowly and with some pain for half an inch, when it suddenly slipped into a capacious urethra beyond. On withdrawal, it was firmly held at half an inch from the meatus. On the same day I incised the stricture freely with Civiale's bistourie caché and passed No. 30 f. and sent him home with directions to his professional attendant to have dilatation practiced daily until healing of the wound was complete. Returning July 2d, he reported himself as having had entire relief from his bladder trouble, and from the discharge since the healing of the incision. For a few days previously, however, he had suffered with some vesical irritation. Examination revealed some contraction still remaining on the site of the stricture; this I at once relieved by the use of the dilating urethrotome, and passed 30 f. down into the bladder. For over thirteen years this patient has been free from all urinary difficulties.

CASE XII.—T. W., aged thirty-five, had gonorrhœa fifteen years ago; has had it several times since. The last time, four years ago, coming on forty-eight hours from date of exposure. After the discharge had existed ten or twelve days, he states that he "stopped it with a powerful quack injection." Three or four days subsequent to this he began to suffer with a neuralgic pain in the left testicle, the scrotum became tender and red, testicles moved up and down alternately much of the time, and the penis was greatly contracted; there was likewise pain in the groins, described as drawing and sickening, which extended down into his knees and the bottoms of his feet. This continued with varying severity almost without cessation up to February 22d, when he came to New York for treatment. He fell into the hands of an endoscopist, who discovered numerous granular spots deep in his urethra. Applications made at regular intervals for about three months without benefit. An application of carbolic acid to the scrotum gave some relief to his nervous feelings, but this caused vesication, and the relief was but temporary. About May 1st, he sought the advice of a surgeon skilled in

genito-urinary diseases. Slight stricture was discovered near the meatus, and several indurated points farther down. 28 f. solid steel sound was introduced, and after some repetition during one month was given to the patient to be regularly used once in three days until his trouble ceased.

Went back to his home, some eight hundred miles distant, and pursued the plan laid out for him, but received no benefit. The motion of his testicles was almost constant, and the nervous feeling this induced drove him almost frantic. Compared with it the pains in his groins, knees, and feet were a positive relief. He became very low-spirited and despondent. Early in October his physician (who had accidentally met with an article of mine in the second number of Dr. Brown-Sequard's Archives on "Reflex Irritations of the Genito-Urinary Apparatus, resulting from Stricture") advised him to return to New York and put himself under my care. My examination discovered a penis of normal size, three inches in circumference; scrotum greatly relaxed and covered with eczematous scales produced by the carbolic acid; testicles hanging very low. My attention was at once drawn by the patient to the rhythmical contraction of the cremaster muscles, through which a see-saw motion of the testicles was kept up, and which constituted his chief annoyance. Bulbous sound 30 f. passed the meatus, but was arrested at one half inch, a point to which his greatest sensitiveness, during passage of instruments, had always been referred. Bulb 28 f. passes through and detects another stricture at two inches, and still another at two and a half.

On Friday, October 17, at my invitation, the patient was examined by Dr. Coldham, of Toledo, Dr. J. De-Forrest Woodruff and Dr. Frank Howe, of New York, especially in reference to the spasmodic action of the cremasters. This was very marked and constant, and continued until the patient was placed under the influence of ether by Dr. Howe. I then demonstrated the size and locality of the strictures before mentioned, and divided them in succession with the (my) large dilating urethrotome, after which I passed with ease a 30 f. steel

sound through all and into the bladder. As the patient emerged from the influence of the ether, it was observed that there was no longer any of the spasmodic action of the cremasters. When he became conscious, he stated that he already felt less of his nervous feelings than for many months. He was "certain that the right chord had been struck."

October 8. Improvement continues—no return of spasmodic motion.

October 20. Examination with 30 f. bulb shows a slight clinging at one-fourth inch from the external orifice. Cut this at once, and freely, with straight bistoury, and pass 31 f. The patient, on the following day, expressed his belief that a complete cure had been effected; that since the final division of the meatus he had not the slightest return of the abnormal sensations and pain with which he had, in some degree, constantly suffered for the previous four years. Daily introduction of the bulb was kept up, in this case, until all bleeding ceased, when the patient was dismissed with the promise on his part to inform me by post if he had any return of his trouble. No such information was received.

CASE XIII.—Mr. H. D., aged fifty-one, had been under my professional care for several years; suffered from renal colic on two occasions—once in 1869, and again in 1871. Was not conscious of having passed any stone through the urethra. Came to me in February, 1872, complaining of a sense of irritation at the glans penis, and a frequent desire to urinate. Careful exploration of the bladder failed to discover any calculus, but the meatus urinarius was red and tender, and contracted to 20 f. This contraction was at once divided freely; size not noted. The relief from the irritation was immediate and complete. In May, 1873, Mr. D. called, stating that his old irritation had returned. Examination showed that the meatus had recontracted to 23. This was again divided, with relief equally prompt as on the first occasion; but in the subsequent daily introduction of a glass tube, size, 30 f. an unnecessary degree of violence was used by the patient, setting up an inflammation, which extended back as far as the

prostate, and threatened to culminate in an abscess of that organ. This inflammation was accompanied by a discharge which did not differ from an ordinary gonorrhœa in the declining stage. After two months of treatment the discharge still continued, with more or less irritation of the vesical neck. Meatus re-contracted to 24. Again cut to 30 f. This operation was followed by immediate relief from the vesical irritation. The discharge ceased without other treatment, and up to May, 1883, the cure has remained permanent.

CASE XIV.—Mr. M., aged twenty-seven, had a history of seminal weakness, following self-indulgence from fourteen to seventeen. Has never had venereal disease. Began to notice a lack of virility a year ago. Seminal emissions weekly. Erections imperfect. Frequent desire to urinate, which is promptly relieved by tr. ferri-mur.; but this soon caused constipation (in spite of any thing short of brisk cathartics), and increase of seminal discharges. Has a constant and annoying sense of wetness about the glans. Always dribbles in his clothes after urination. Microscopic examination of urine shows nothing abnormal but a few shreds of mucous. Prescribed mixture of bromide of potassa and bromide of ammonium, which arrested seminal emissions for a full month. He returned in better spirits. Had much less sexual desire than formerly, and occasional imperfect erections. Had not been obliged to urinate more than three or four times a day, since taking the bromides. When he came to me he described the desire to urinate as *unceasing*. After a month he returned with some measure of his urinary irritation, although still taking the bromides. Great annoyance at the dribbling after urination, and says that the constant sense of *wetness* is depressing to the last degree. Examined meatus critically; 30 f. passes, but hugs slightly on return; 31 will not pass. Size of flaccid organ three and one-half inches in length, and four in circumference. From this I estimate the normal caliber of the urethra at 38 f. at least. As the dribbling seemed to indicate some retention at meatus, I concluded to divide it freely. This was done without pain, under the influence of local anæsthesia,

when bulbous sound No. 38 f. was passed with ease through the length of the urethra, detecting several small sensitive granular points in its course. The relief from the dribbling in this case was immediate and complete. The *sense of wetness* (as the patient always expressed it), which gave him so much annoyance, was completely removed. Although taking no internal remedies, he has no return of emissions; the irritation of the bladder also disappeared. In this case the difference between 30 f., which measured the size of the evidently contracted and unresilient meatus, and 38 f. which was easily passed after division of the stricture, viz., eight millimeters, showed the extent of the contraction.

CASE XV.—A. W., aged twenty-seven, seventeen years ago had first attack of gonorrhœa. Afraid and ashamed to speak of it, he suffered greatly for four or five months without any treatment whatever. Has had several attacks since, which were treated solely with injections. About six months ago had an attack of subacute prostatitis, which caused him much pain, both in urination and defecation. This lasted several weeks. Since that time he has had desire to urinate more frequently than natural—several times during the day, and also disturbed frequently at night. For the last five days he has been obliged to pass water almost every hour during the day, and at least every hour during the night, suffering great pain in the perineum, also in the rectum, at each act of micturition. He has, besides, a constant desire to defecate. January 10, 1874, examination per rectum reveals a tender and enlarged prostate, fully double the normal size. External genital organs normal, except the meatus urinarius, which was contracted to 20. Circumference of penis three and one-fourth inches. On passage of 20 bulbous sound, a distinct, unyielding fibrous ring was detected, which held the bulb firmly at one-fourth inch on its return. 19 detects second stricture at one inch, and a third at one and three-fourths.

For the patient's immediate relief, half a dozen Swedish leeches were ordered to be applied to the perineum at the anterior border of the anus. Morphia supposi-

tories every four hours. Under this treatment, with rest in bed, the rectal discomfort abated. Frequency of micturition, with pain in the perineum and rectum, remained without much amelioration until January 16th. On this date the patient was etherized, and with the assistance of Dr. Beach Jones and Dr. Weisfelder, I first divided the stricture at the meatus freely with Civiale's *bistourie caché*; then introducing the small urethrotome, I dilated to 30 f. and cut the second stricture at one inch; readjusted and cut the third at one and three-fourths, after which 31 steel sound was passed readily into the bladder.

The relief from pain and irritation in the rectum and at the neck of bladder followed the operation almost immediately. By the following day the desire to urinate was reduced to the normal standard, and the patient was disturbed only once during the night. February 10th, twenty-six days after the operation, he reports himself as having no further trouble, and as passing his water two or three times during the day and once at night. Examination per rectum shows the prostate free from tenderness, but fully double its normal size. Thirty-one steel sound passes through the urethra without the slightest trouble.

LESSON LXI.

Clinical cases continued—Case XV.—Subacute prostatitis—Frequent urination—Pain in the perineum and rectum on micturition—Acute enlargement of prostate—Prompt and complete relief on division of meatus and deeper strictures—Case XVI.—Frequent and painful micturition resisting all treatment—Cystitis—Pains in testicles, back and abdomen, promptly relieved by division of strictures—Case XVII.—Frequent urination—Cystitis—Ordinary treatment ineffectual—Pains in hypogastria, thighs, testicles—Immediate relief upon division of contracted meatus urinarius—Cure permanent.

CASE XVI.—Mr. X., aged fifty-four, seen in consultation with Dr. Ives, his family attendant. Had a history of gonorrhœa twenty-eight years previous; severe, lasting two months. Second attack eight years ago; not severe; subsiding entirely in ten or twelve days under the use of injections of acetate of lead alone. Three years ago he began to be troubled with frequent micturition during the day and four or five times at night, associated with pain extending from the end of the penis to the neck of the bladder; also pain in the testicles and perineum, and extending down the thighs. Urine occasionally stopped and required to be drawn off with a fine catheter. Was taught to do this himself, and has often obtained relief in that way. About the first of August last, after using the catheter, he discovered a small bit of gravel in the eye of the instrument. Since that time he has voided a large quantity of the same sort, with fine, whitish sand, mucus, pus, and blood. Was under the care of a prominent surgeon in Brooklyn last summer, who, after careful examination, assured the patient that he had no stone in the bladder. This surgeon treated him at first by frequent washings out of the bladder; afterwards he used the galvanic current, with one pole in the bladder and one on the back. This was continued *daily* (!) for six weeks, but no improvement was manifest, and as the patient was much debilitated, he was sent into the country to

recruit. Since that time he has had no treatment except the use of Lee's lithontriptic pills, and the use of the catheter when required by attacks of retention of urine.

November 24, 1873. Present condition: Is in feeble general health. Has an expression of great and constant pain; is very restless and moans frequently, although evidently attempting control; skin pale and yellow; says his weight is 130; weight formerly 160. Genital apparatus well developed. Right testicle invaded inferiorly by a mass of fibrous feel, involving one-half the body of that organ. Left much the same, but softer. Passes urine in my presence in a small, divided, uncertain stream. Urine of strong, stale odor, thick and muddy in appearance. Albumen present in considerable quantity. Cursory microscopic examination shows cells of pus and blood. Epithelium from urethra, bladder, and pelvis of kidneys, but no casts. Meatus urinarius apparently normal. Twenty-nine bulbous sound passes to the depth of one-third of an inch; it is, however, abruptly arrested at this point, and only 20 f. will pass. This (No. 20) found no farther obstruction in the deeper portion of the canal, but, on return, was firmly held at three-fourths of an inch, thus defining a stricture more than one-third of an inch in breadth. Visiting the residence of Mr. X., November 26th, he was found walking the floor with constant moans, begging to have the operation done at once to relieve his agony. Assisted by Dr. Ives, the patient was promptly anæsthetized. The stricture near the meatus was then thoroughly divided, and No. 30 f. bulbous sound passed through to one inch—here it was abruptly arrested; 24 f. only would pass, and was held firmly on return at one and one-third inches. I then introduced the dilating urethrotome, turned up to 30 f. and cut; 30 f. bulb was passed down to two inches, where it was again arrested; 28 f. only will pass, and, on withdrawal, is held at two and one-fourth inches. Readjusting the urethrotome, this band was also divided, when 31 f. steel sound was passed without force through the entire urethra. Ferguson's short-beaked sound was then introduced into the blad-

der and thorough search made for stone, but without success. Hæmorrhage slight, ceasing within fifteen minutes after the operation. Dr. Ives remains in charge.

November 29, three days subsequent to the operation, Dr. Ives called, reporting that the patient had no pains of any kind following the operation, up to his visit of yesterday. Under the influence of ten grains of quinine and a quarter grain of morphia he had slept for six hours, and on waking passed water with freedom, with slight smarting, but no pain. After this, the intervals between the act of micturition averaged about four hours. Passed the steel sound 31 with ease. Purulence in the urine greatly decreased.

December 16. Dr. Ives reports Mr. X. as having suffered for a day or two past with pain in the penis. Purulence in the urine has entirely disappeared; 30 steel sound drops through the urethra into the bladder by its own weight. The possibility of slight recontraction of the stricture at the meatus as cause of trouble was suggested.

Decembar 23, Mr. X. called with Dr. Ives. He reports personally that, while he passed his water every half hour with great straining and pain before the operation, that since then he has not been called to urinate oftener than once in three or four hours, up to within a week since, when it has been once in two hours. All the pains in the back and the lower part of the abdomen, in the testicles, and extending down the thighs, passed off entirely within a few days after the operation. During the last ten days he has had pain, referred to the vicinity of the prostate, when urinating, and the stream has been small and weak; could void it only by straining. He had himself passed 30 f. steel sound the day previous.

Examination of the prostate, per rectum, reveals no enlargement or tenderness; 30 f. sound passes without difficulty into the bladder, except a little hugging near the meatus; 29 f. bulb is arrested at one-fourth of an inch, and holds, on return, at three-fourths. I introduced a straight bistoury and cut through the contrac-

tions, so that No. 34 f. bulb passed in and out without obstruction, to keep this well open until healing is complete. Entire relief followed.

CASE XVII.—October 9, 1873, I was called to see a gentleman, aged sixty-four, whose general health had always been good; he had lived generously, but regularly. He stated that for the ten years previous he had occasion to urinate on an average every hour during the day, and through the night even more frequently; for the previous six months he was confident that he had micturated every half hour, unless some necessity prevented, when he always suffered from the delay. At no other time had he any pain; the frequency of micturition was simply an inconvenience. He stated that he had never had any gonorrhœal trouble. Several years previously he had consulted an eminent surgeon in regard to his urinary trouble, and was said to have "stricture just beyond the middle of the penis." For this he was treated by the occasional introduction of bougies for a couple of months, at the end of which time, no benefit being apparent, he ceased bestowing any attention on the matter. About three months previous he began to notice a creamy sediment in the urine, which would cling to the floor of the *pot de chambre*. It was not, however, until about three weeks ago that he began to suffer actual pain and straining on passing his water. To this was soon added pain *in the testicles, through the hypogastrium, and also in the perineum, and extending down the inner aspect of the thighs to the knee*. The stream of urine was subject to frequent sudden arrest, and the straining which followed was severely painful, and pain extended throughout the regions previously mentioned. The urine soon became of a deep reddish brown color, with occasional strings of blood and mucus mixed with the copious creamy sediment, which was now persistently deposited. Notwithstanding all this, he continued to ride daily, a distance of some three miles, to his office. About a week since, finding the motion of his carriage greatly aggravating his penis, he consulted an eminent medical personal friend of his, who informed him that he had a

grave cystitis, and commended him to my care. I found him sitting on a hop poultice, which had been prescribed for him by his wife's medical attendant (a homœopath), and ascertained that he had been taking frequent doses of a homœopathic preparation of belladonna.

Present condition: Constitutional disturbance very slight, pulse 80 f. temperature $93\frac{3}{4}$. Inspection of urine in the the *pot de chambre* (which was about one-third filled, and had been standing for several hours) showed a deposit of mucus and pus, stained and streaked with blood, fully one and a half inches in depth. Examination per rectum determined the prostate to be of even less than the normal size, and free from tenderness.

The introduction of Ferguson's short-beaked sound (No. 20 f.) into the bladder was effected with great gentleness, with ease, and without meeting with any abnormal impediment in its passage. The bladder was then thoroughly explored for calculus, but with a negative result. Confident, at first, from the history and condition of the case, that it would prove to be one of stone in the bladder, I had, thus far, only cursorily examined the meatus urinarius. Ferguson's sound (No. 20 f.) had passed through it easily. 22 f. and 23 f. bulbous sounds were now passed with ease, but 24 f. was held at one-third of an inch. After slight pressure for a few seconds it slipped suddenly through a ring of fibrous tissue and passed, without obstruction, down to the bulbo-membranous junction. The patient was then put upon a free use of infusion of *tricum repens*, and suppositories of belladonna and hyoscyamus every six hours.

A subsequent microscopical examination of the urine showed pus and blood in abundance, some urethral and vesical epithelium; none from the ureters, or pelvis of the kidneys; no casts; albumen slight; specific gravity 10.20.

On suggesting to the patient that division of the strictured meatus was likely to be a necessity before much relief would occur, he desired that his friend, Dr. J. Marion Sims, should be called in consultation.

On Thursday, the 14th, after an exhaustive consideration of the case, Dr. Sims coincided with me as to the possibility, nay (in the absence of calculus and prostatic disease), of the probability, that the well-defined contraction at the meatus was the original cause of the cystitis, and might be justly held responsible for its continuance. The operation was at once decided upon, and the patient placed under the influence of ether by Dr. Harry Sims. I then thoroughly divided the contraction—first by the use of *Civiale's bistourie cachée*—completing the division of some remaining elastic fibres with a straight blunt bistoury, until the opening admitted bulbous sound 31. This was then carried easily down to the membranous urethra, without discovery of any farther obstruction. The bladder was again thoroughly explored for calculus by both Dr. Sims and myself. It was found to be much contracted and thickened, but contained no stone.

On the 15th (the day following the operation) I ascertained that, since the division of the contraction, our patient had not had the necessity of passing his water more than once in two hours, and that the pains in the testicles, the hypogastrium, the perineum, and down the thighs, which had previously been his chief points of suffering, had *entirely disappeared*. There was manifestly less blood in the urine. By the 16th the pus had diminished one-half in quantity, the blood had entirely disappeared, and the intervals between the acts of urination had increased to two hours and a half. From this date the only treatment to which the patient was subjected was the daily introduction through the meatus, into and not beyond the fossæ navicularis, of a No. 31 bulbous sound. By the 26th (twelve days from the date of operation) the purulent sediment in the urine had entirely disappeared; riding or walking no longer gave him discomfort, and he had resumed his business. The intervals between acts of urination now vary from two to three hours. There is an occasional occurrence of spasm during the act, which causes the sudden stoppage of the stream, and the urine is voided slowly, and with but little more force than before the operation,

but he is not conscious of any other abnormality remaining. He expresses himself as feeling and being in better condition than for years. A few days subsequent to this interview with the patient he went abroad to remain during the winter.

LESSON LXII.

Clinical cases continued—Cases XVIII.—Chronic inflammation of the bladder—Gleet—Resisting every sort of treatment—Neuralgic pains in the groins, thighs, and in the perineum—Enlargement and discomfort in testicles—Detection of contracted meatus and deeper stricture—Immediate relief through division of the meatus and stricture—Complete recovery without other treatment within four weeks—Summary of foregoing cases—Explanation of causes which produce reflex disturbance—Manner in which relief is afforded—Method of operation in such cases—Results proving the correctness of diagnosis—Urethrismus.

CASE XVIII.—Aaron B., aged sixty-eight. History of a first gonorrhœa at twenty-one. Married at twenty-seven; had seven children, and no trouble with genito-urinary apparatus until four years ago, when he contracted another gonorrhœa. This, after a month, subsided into a gleet, and to this, in about three months after, catarrhal cystitis was added. The cystitis resisted every treatment, and has continued, in a greater or less degree of severity, up to the present time. About a year since he began to suffer with neuralgic pains in the groins and in the perineum, and he experienced a very uneasy sensation in his testicles, one of which became suddenly enlarged.

November 26, 1874. Penis only two inches in length, flaccid, three and one-fourth in circumference. Meatus 18 f. Left testicle half usual size; right normal, but with a greatly enlarged and soft epididymis, almost entirely covering in the glandular structure, and forming a swelling above it as large as a Madeira nut, and described as the seat of long-standing and very troublesome irritation. Some muco-purulent secretion from urethra. Has been treated for some time by use of soft bougies with pain and no relief. Complains of pains in back and groins, extending down along inner aspect of thighs; urination every half hour, day and night; freshly voided urine, loaded with pus and mucus; reaction alkaline; strong urinaceous odor; no renal

epithelium or casts; albumen slight; is uneasy and restless in manner, and full of anxiety, quite like a confirmed hypochondriac. Examination with 18 f. bulbous sound detects a stricture at the meatus, extending back for half an inch, after which it slips down the urethra without giving evidence of any farther obstruction.

December 22. I saw the patient in consultation with Dr. Willard Parker. Division of the stricture at the meatus agreed upon. Ether administered by Dr. Charles Turnbull. The stricture at the meatus was first divided. Dense cicatricial tissue, extending for fully one-half inch. Bulbous sound 32 f. was then passed to two and three-fourth inches, when it was arrested by a second stricture. 29 f. defined its calibre. The dilating urethrotome was then introduced, turned to 34, and the stricture divided. 31 solid steel sound then passed without obstruction through into the bladder. Relief to the neuralgic pains followed the operation almost immediately. Within forty-eight hours the intervals between the acts or micturition had increased from one-half hour to four or five hours. Purulence in urine greatly decreased. Irritation in the scrotum ceased, swelling of epididymis gradually went down, and the patient made a complete recovery, without other treatment, *within four weeks*.

In the foregoing cases, presenting features more or less grave in their conditions and consequences, a point of significant interest is common to all, viz., an abnormal contraction at or near the meatus urinarius, the well determined sequel in the majority of instances of antecedent inflammatory action. Abnormal spasmodic muscular action plays a prominent part in every case. Spasm of the urethral walls, of the accelerator urinal muscles, of the cremasters, of the vesical neck, and of the seminal ducts, etc.; spasm, as in Case X., so firm and persistent that the urethral walls finally gave way behind it; spasm that for months resisted the introduction of the smallest instrument, as in Case III.; spasm so persistent that the bladder was not allowed to completely empty itself for years (as in Cases XVII., XVIII., and XIX.), and thus producing the chronic catarrh, which fin-

ally became so grave an element in these cases; spasm, as in Case XII., where the testicles played at see-saw for nearly three years, and until the poor wretch who owned them was driven to the verge of suicide.

Some one or several of these conditions appear as a persistent feature in each. Spasm, a well-recognized result of irritation, is equally significant of debility. Most of the cases, if not all, were subjects of sexual excess. Irritation supervening upon nervous debility, spasm naturally results. Irritations which are known to give rise to reflex disturbance are *not of necessity painful irritations*, or which by any special sensation invite attention at once to the source of trouble. Dr. Hanfield Jones (in his work on Functional Nervous Disorders, page 704) says: "It seems to be well ascertained that *unfelt* irritation may give rise to very various morbid phenomena, affecting both the motor and sensory nervous organs. Dr. Brown-Sequard maintains that various forms of insanity, of vertigo, chorea, hysteria, tetanus, etc., may be due to irritations, starting from a centripetal nerve, and frequently *slightly* felt or *unfelt*, and that the suppression of these irritations may promptly cure the patient." He cites a case where a married lady suffered for a considerable time with a uterine neuralgia, which ceased completely on the extraction of a tooth that had not caused any considerable annoyance.

In the excellent little *brochure* on Stricture of the Urethra, by Samuel R. Wilmot, London, he says: "It is easy to conceive with what ease morbid irritation in the urethra may elude detection, and which, though slight, may be capable of exciting perfect reflex action, particularly in systems of high nervous mobility, and, where the slightest irritation exists within the urethra, the mere influence of the mind, derangement of the digestive organs, and various other remote causes will lead to spasm." What, then, in these cases of evident reflex nervous trouble, is suggested as the cause of the irritation? Division of a contracted meatus, as has been shown, relieves the reflex disturbance; and yet simple contraction of the meatus cannot be sufficient to

produce such morbid nervous actions as cited; for it is well known that congenital contractions at this point are frequent, and yet no irritation ensues. In congenital contractions, however, the muscular surroundings of the urethral orifice are in a normally supple condition, and able efficiently to play their part in completely emptying the urethra after micturition. Let this delicate muscular structure become infiltrated with plastic material, and the complete discharge of the last drops of urine, through its action, is rendered impossible. A *dribbling* after the act is the necessary consequence, and this is also an *unvarying* feature in all the foregoing cases. It is this inevitable retention of a few drops of urine which I believe to be the starting-point of the irritation. As time goes on, and the resulting plastic exudation becomes organized, cicatricial tissue forming and necessarily condensing, a permanent contraction results, which adds to the muscular inefficiency, especially when it occurs in an orifice congenitally insufficient. It is this condition which often prolongs a gonorrhœa, and is the most fruitful source of chronic urethral discharge following a gonorrhœa. That the retained urine causes the irritation I am led to believe still farther, inasmuch as behind strictures at the meatus granular spots of inflammation occur, sometimes extending throughout the urethra, and on relief of the stricture promptly disappear without other treatment, as in the third case cited. I have seen many such. Local points of tenderness were present in almost, if not quite all the cases of reflex urethral irritation that I have met.

Then, as the urethral orifice becomes permanently contracted and unyielding, a distinct and sudden *arrest* of the stream of urine repeatedly occurs during the forcible acts of urination. Is it too much to believe that the force of this blow at the point of arrest will add to the irritation, and that the effect of its recoil should be felt back even to the vesical neck? It seems to me that this may, after long years of such constant irritating influence, prove an important element in disturbing the harmonious action of the complex sensory,

motor, and sympathetic nerve distribution, in the deeper parts of the urethra.

Considering the force and persistence of the spasm in certain cases, the idea of its *tetanic* nature has suggested itself, induced by pressure and irritation of the nerves of the glans, in the cicatricial contraction. The treatment of the contractions by complete division, resulting in prompt and notable relief in all the cases, is equally suggestive of simple mechanical obstruction, (causing urinary retention), or cicatricial irritation. To be effectual, however, the division must be absolute and entire. It is not sufficient that the meatus be enlarged up to the normal urethral caliber. The incision must reach down *through all cicatricial tissue*, and so completely that the largest sized bulbous sound which can be passed through the opening shall pass in and return *without the slightest sense of resistance*. If it is less than this, the contraction is absolutely certain to return within a few weeks, often within a few days, in spite even of every possible effort to keep the parts dilated. Once, however, the stricture tissue is completely divided, it is then only requisite that the edges of the wound be kept asunder by the occasional introduction of a sound, until granulation is established throughout its extent. After this (if no new inflammatory action is set up) not only will no recontraction take place, but the old abnormal fibrous material will in time become wholly absorbed. This important statement, applying virtually to all strictures of the urethra wherever located, I do not make without the ability to prove it by the results of this plan, as presented in many cases thus treated.

URETHRISMUS.

The term *spasmodic stricture* has usually been applied to all temporary contractions of the urethra, which interfere in any degree with either the passage of instruments into the bladder, or the voluntary discharge of urine from it.

As thus understood, it has been described as varying in degree from the slight localized muscular spasm, which but momentarily arrests the progress of an ingoing instrument, to the firm, close contraction which more or less persistently resists its introduction in skilled hands. Or, from that which occasionally diminishes the strength and volume of the outgoing stream of urine in urination, to that producing complete and enforced retention of urine.

In whatever degree present in any case, it is claimed by all authorities to be characterized by its *transient* duration and its ready yielding to simple remedial measures. In accordance with this teaching all permanent or habitual interference with urination or with the passage of instruments (except in some rare instances complicated with vesical paralysis), must have an organic cause, and depend either upon the presence of an intra-vesical growth, an enlarged prostate or a true organic stricture. Not unfrequently, however, persistent difficulty of urination, and even retention of urine requiring habitual use of the catheter, has been observed by surgeons, where no proofs of intra-vesical growths were present, and where the easy passage of an ordinary catheter precluded the idea of enlargement of the prostate or of close organic stricture. It is also within the experience of many surgeons to have seen supposed subjects of close organic stricture placed upon the operating table for performance of external perineal urethrotomy, and, when fully anæsthetized to astonish the operator by permitting the full sized exploratory staff to slip easily into the bladder.

In other cases the entire absence of that peculiar resistance to the knife, which the experienced surgeon recognizes when dividing cicatricial tissue, and the failure to locate with exactness the contracted point, will suggest to the memory of some that occasional patients, *perhaps* similarly affected, have not escaped so easily. It is scarcely an argument against these suggestions that reports of such cases have not found their way into the published records of urethral surgery. If now it can be proven that *purely spasmodic*

urethral contraction may, and not unfrequently does, present *all* the important diagnostic features of *true close organic stricture*; and farther, if it can be shown that polypoid and prostatic obstruction are often simulated by a chronic spasm of the accelerator urinæ muscles—producing obstruction and persistent closure of the membranous urethra—then it will be conceded that failure to appreciate so important a complication will conduce to grave errors in diagnosis, terminating possibly in an operation for conditions which exist only in the mind of the surgeon.

LESSON LXIII.

CHRONIC SPASMODIC URETHRAL STRICTURE.

Chronic spasmodic stricture—Views of authorities concerning the muscularity of the urethra—Views of Sir Henry Thompson in 1858 and 1869, in regard to spasmodic stricture—Quite at variance—Mr. Erichsen's views—Dittel's views favoring the occurrence of spasmodic stricture—Dr. Bumstead considers its short duration a diagnostic feature—Drs. VanBuren and Keyes coincide with this view—Dr. Stilling demonstrates the capacity of the urethra for muscular spasm, at any point in its course—The author's claims of a liability to spasmodic closure of the urethra at any point in its course and with such persistence as to simulate true organic stricture—Clinical cases in illustration.

Before the muscularity of the urethra was demonstrated by Hancock and Kölliker, the presence of an organic muscular layer, surrounding the urethra, was inferred by such acute observers as John Hunter, Everard Home, Lisfranc, Dupuytren, Guthrie and others, from the fact, that obstructions to the passage of instruments were met at all points in the course of the urethral canal, which were of a transient character, and that a distinct grasping of urethral instruments was occasionally recognized during their passage. Interference with micturition was, however, referred more particularly to spasm of the inorganic or voluntary muscles (*compressores urethræ*) which surround the urethra, in the membranous portion of the canal, and was attributed to the influence of reflex irritations, from various sources. The lines which naturally separate these two varieties of spasmodic urethral stricture have not usually been made prominent in considering the subject, although the distinct character of each, in regard to effect and locality, would seem to render it a matter of considerable practical importance. In regard to *cause*, we have the division of Sir Henry Thompson,* into those which result from some local

* Thompson on Stricture of the Urethra, London ed., 1858, p. 130.

lesion, which he terms *eccentric* spasmodic contractions, and those in which this is not present or appreciable, and which may be supposed to have a *centric* origin. "Among the *eccentric* causes," he remarks, "none is so common as a partial organic contraction . . . acting especially in concert with such lesions, is the passage of urine over denuded and sensitive surfaces, which becomes a still more fruitful cause, if its character be altered from those of health in any way. All irritations, of whatever nature, within the urethra or in contiguous parts (such as hæmorrhoids or ascarides in the rectum), would be included under the head of *eccentric* causes; while the term *centric* is made to include mental impressions, and all such as cannot be referred to a definite locality." "The grand distinguishing feature," says Sir Henry, "which marks the phenomena (of spasmodic strictures), and by which they are contrasted with organic strictures, is their *transitory character*."

Again, p. 49, op. cit., he says: "Examples of pure spasmodic stricture are, without doubt, rare. Still, the influence of muscular action upon the urethra being considerable, it is important to recognize it in diseased conditions of the organ, since it commonly supervenes upon and complicates most of them. Indeed, neither organic nor inflammatory narrowing of the urethra can well be imagined to occur without the co-existence, at some time or another, of spasmodic action, to some extent, in the muscular tissues around."

The views of Sir Henry Thompson, as above given (in 1858), would seem to have undergone some modification, since, in his latest work ("Thompson on the Urinary Organs," London, 1869), while admitting urethral spasm as a physiological fact, he inclines to ignore it as a matter of importance to the competent surgeon. Thus, page 38, op. cit., he says of spasmodic stricture, "*it is an exceedingly useful excuse for incompetence. Spasm may prevent the urine from going outward, but I do not know that it ever prevents an instrument from going in.*" Mr. Erichsen, who is also deservedly eminent as a surgical authority, says:* "From the fact

* Erichsen's Science and Art of Surgery. London. 1860. D. I. 111.

that a patient will, at one time, pass his urine with the most perfect freedom, while if it be rendered acrid by drinking spirits, etc., almost complete obstruction will ensue, this tends to prove the existence of occasional spasmodic contraction of the canal." In referring to the views of Sir Henry Thompson, he says: "While I would not go so far as that surgeon in declaring that the name (spasmodic stricture) is merely a cloak for want of skill, I confess that I meet with spasmodic strictures less often than when I entered practice, and I believe the same to be the experience of others."

Dittel * says: "Spasmodic strictures are not generally accepted, and yet it cannot be disputed that difficulties which simulate stricture occur in certain morbid conditions and predispositions; *they lack only the constancy.*" Difficult micturition, strangury, and an alteration in the stream, were noted by him as resulting from venereal excess, from the acid urine of patients suffering from pyelitis, and from the urine of diabetic and arthritic patients, and from irritations of the rectum also and colon, by worms, excoriations and fissures, and also from mental anxiety. He cites an interesting case, where retention of urine resulted, apparently, from the latter cause alone, and which, on two occasions, he relieved by the introduction of a 25 Charrière catheter, after pressure against the anterior face of the obstruction (which was at the membranous urethra) for a quarter of an hour. Dr. Bumstead, in his excellent text-book "Venereal Diseases," Phila., 1870, p. 237, accepts the frequent occurrence of spasmodic urethral stricture, and says of it: "A spasmodic stricture is characterized by its *short duration*. It appears suddenly in persons of delicate habit, . . . and as suddenly disappears. Exploration of the canal by means of a sound, after the spasm has passed, and frequently during its continuance, shows that there is no organic obstruction." In the recent work of Drs. Van Buren and Keyes ("Genito-Urinary Diseases with Syphilis," New York, 1874, p. 93),

* Pitha & Billroth's Handbuch der allgemeinen und speciellen Chirurgie. Dritter Band, p. 49, 1872.

accepting it as frequently resulting from above-mentioned causes, and as liable to occur in the attempted introduction of an instrument through the urethra, they remark: "It (the instrument) may be firmly grasped and held at any part of the canal, but this is more liable to occur just as the instrument is entering the *membranous* urethra, when its point may be detained for many minutes by the involuntary contraction of the *cut-off* muscles (*compressores urethræ*). If the end of the sound is held quietly for a few moments against the contracting muscle, the spasm will yield and the instrument pass on into the bladder."

In comparing the views of these recent, accepted authorities in regard to the spasmodic urethral stricture, it will be observed that all agree as to its frequency, its transient character, and its easy management.

Dittel met with a case where the pressure of the end of a catheter for fifteen minutes against the face of a spasmodic stricture, at the membranous portion, was required before it yielded. Van Buren and Keyes have evidently had similar experiences, as they note this occasional *persistence* of the spasmodic barrier. Sir Henry Thompson inclines to ignore the existence of the spasmodic stricture, and attributes to ignorance and incapacity the arrest of an instrument in its passage into the bladder, from any cause but an organic one. In this Mr. Erichsen seems quite inclined to agree, although appreciating the possible occurrence of a spasmodic stricture which should be so persistent that it *might* be mistaken for an organic contraction.

It is not my purpose at this time to discuss the general question of spasmodic stricture. The recent investigation of Stilling (coinciding with those of Kölliker) would seem to show conclusively that the muscular capacity of the urethral surroundings is quite sufficient to account for any amount of contraction which might be observed at any point. In his own strong language (supported by several admirable illustrations of the anatomy of the corpus spongiosum urethræ) he says: *

* B. Stilling, Die rationelle Behandlung der Harnrohren Stricturen. Erste Abtheilung, p. 9.

"the corpus spongiosum is a muscle through which the urethra runs." Dr. Stilling so demonstrates the muscular stricture of this body, that it is at once seen to be an easy matter for such a contraction of the muscular stricture of the corpus spongiosum to bring a strong contracting force to bear upon any part of the urethral canal. While thus accepting and claiming the liability of the entire urethra to spasmodic closure, which, under certain reflex influences, might embarrass, if it did not deceive, a well-informed surgeon, I desire to present a series of clinical observations, to illustrate the probable frequent occurrence of spasmodic strictures at the membranous portion of the canal, which present *all* the diagnostic systems of true organic stricture, and which cannot, with certainty, be differentiated from organic stricture by any of the plans recommended by authorities.

CASE I.—J. W., frontiersman, aged 45, presented November, 1874, with a history of first gonorrhœa 20 years previously, and several subsequent attacks. Five years ago began to have difficulty in passing his urine; stream growing gradually smaller, until, after a debauch, he had complete retention, and was obliged to seek relief at a neighboring military post. After 36 hours' suffering, he was relieved by the passage of a very small, flexible catheter, in the hands of the post surgeon. After this he submitted to treatment, by gradual dilatation, for several months. He then learned to pass No. 12 English soft bougie. From neglect, he has had some half a dozen attacks of retention during the past year. At last only the smallest instrument could be passed by the military surgeon, and he was advised to go East and have a radical operation performed, as there were no instruments at the post suitable to operate upon so small a stricture. His habit for a long time has been to pass his water very frequently during the day, in a very fine, irregular stream, and several times during the night. Examination: Is of large stature, looking like a strong man, who had endured much exposure and hardship. Made has water in my presence, in fine, short jets, chiefly dribbling. Circumfer-

ence of the penis, three and one-half inches; size of meatus, 23 f. steel sound passed very easily through a very sensitive urethra to the bulbo-membranous junction, where it was arrested. Gradually decreasing bougies were introduced, until finally No. 12 f. passed into the bladder, closely hugged in the deep urethra. Allowing it to remain for a few moments, I found it free. I then withdrew it, divided the contracted meatus and stricture, extending for nearly half an inch back, and passed 34 f. solid steel sound slowly down to the bulbo-membranous junction, when it *slipped by its own weight into the bladder*. After the withdrawal of the sound the patient passed his water in a full, large stream. From this moment he had no further trouble in urination, passing his water at intervals of six to eight hours during the day, and not at all at night, for the week subsequent to the operation, when he left for his home in the far West, apparently well in every respect.

CASE II.—Mr. W., age 27, had first gonorrhœa four years previous, lasting in acute form for one month, and with painless discharge for six months longer. Has had frequent returns of the discharge without fresh exposure; had been under treatment for close, deep stricture for the past year, by several surgeons. Passed his urine in a small irregular stream, once in two or three hours. His last surgical attendant, after two months' treatment, by injections and internal remedies, sent him to me, not being able at any time to pass an instrument into the bladder. Examination showed external organs large, meatus contracted to 24 f., red and pouting, and bathed in a profuse muco-purulent discharge. Twenty-four f. sound is arrested at five inches. Only fine filiform will pass, and that is closely hugged. Three days after, pass filiform with ease and follow with No. 10 f.; then, with some effort, with No. 16 f. After this the filiform was again snugly held in the membranous urethra. I divided the stricture at the meatus freely, and introduced No. 30 f. steel sound, which passed, literally by its own weight, through into the bladder.

CASE III.—W. F., aged 45, had gonorrhœa 25 years ago. After five years, having much trouble in passing

his water, he consulted a distinguished surgeon, and was informed that he had a deep organic stricture. Only a very small instrument would pass. By gradual dilatation, carried up to 14 English, the difficulty of micturition was then relieved, but would promptly return on the discontinuance of its regular use. Had a slight urethral discharge, following connection, but usually disappearing without any other treatment than the introduction of the sound. This introduction was continued with great regularity for a period of 20 years, on an average of once a month. Finally, having some misunderstanding with his surgeon, he took his sound and went to another, to whom he recounted his experience, and requested him to pass the instrument. Meeting with some difficulty near the neck of the bladder, his new attendant took a smaller instrument, then another still smaller; and finally, after causing much irritation and some hæmorrhage, he was requested to desist. On the day following he came to my office. Examination showed a penis four and one-half inches in circumference, and an ample meatus. Thirty-four f. solid steel sound (22 English; introduced by my assistant, Dr. Fox), entered easily and passed, without the least force or halting, through the urethra and into the bladder. The size of the penis being four and one-half inches in circumference, indicated a urethral calibre of at least 40 of the French scale, or 28 of the English. I then introduced my urethra-meter, closed, to the bulbo-membranous junction, turned it up to 40, and drew it easily forward to within one inch of the meatus, where it was arrested, and required to be turned down to 34 before it would pass the obstruction. This showed a constriction at this point, of the value of six millimetres. As the patient objected to any cutting operation, the stricture was gradually dilated to 40 f., when the discharge ceased, together with all difficulty of urination, and after a month the patient passed from my observation.

CASE IV.—Mr. F., aged 32; gonorrhœa six years previous. After three years, had frequent and increasing difficulty in urination, which, after an excess, culminated

in an attack of retention, which, after lasting 24 hours, was relieved with a small catheter. Had subsequently two or three attacks of the same kind, relieved in same way. October 18, 1874, another surgeon, after repeated attempts, failed to pass the catheter. I saw him on the afternoon of the 20th. He had passed, *guttatim*, perhaps a pint of urine in the previous 48 hours. Bladder three inches above pubes; patient suffering and anxious; slight fever; pulse 90; temperature 101°. I put him at once under the influence of ether. Penis three and one-fourth inches in circumference (indicating urethral calibre 32 f.), meatus 23 f. Passed 23 solid steel sound without difficulty to bulbo-membranous junction, where it was arrested. Trying patiently one instrument after another, in decreasing sizes, I at last introduced a small filiform bougie (No. 8 f.—1 English), which was closely grasped as it passed through the membranous portion of the canal. The patient was apparently under the full influence of the ether at this time, but the spasmodic action of the compressores urethræ was distinctly recognized. The filiform was hugged at one instant and loose the next. I withdrew it and introduced a No. 10 f. This went in without difficulty. I concluded to pass down the staff of Voillemier and rupture, but found the screw of the bougie imperfect. I withdrew it and attempted to replace it by another. This was resisted in its passage, and it was only after a patient, prolonged effort that I finally succeeded. I then followed it with the staff, which was closely embraced in the membranous portion. I then cut the meatus freely, which I should have done before. In very carefully passing down the shaft No. 28 f., the largest I had (with the intention of driving it in rapidly as soon as the stricture was reached), without meeting the slightest resistance, it went squarely into the bladder. Ten days after he called at my office, with an account of an attack of chills and fever (to which he had previously been subject) following the operation, and stated that he "had had no urinary trouble since, and could pass a stream as large as his finger." In order to test this case (as the rupture, if it was such, had been done with 28 f.), I

passed a 32 f. solid sound, which slipped without resistance through into the bladder. Up to this time (six months from the date of operation) he has remained perfectly well.

CASE V.—In February, 1874, I received a letter from a surgeon, asking advice as to the propriety of operating with my dilating urethrotome upon a stricture in the membranous urethra. "The stricture," he wrote, "is seven inches from the meatus. By using a small, pointed bougie it can be passed, and then easily dilated to 14 of the English scale. In this condition it has remained for several months. Interference with and frequency of urination are his chief troubles. The stricture is to a great extent spasmodic, as, sometimes, it will hold a small instrument with great firmness. Sometimes I have thought there might be the commencement of a false passage, the difficulty of getting an instrument engaged was so great." I wrote, suggesting the careful examination for an organic stricture in the anterior portion of the canal, which by irritation, either from passage of urine or urethral instruments, might cause the deeper trouble. In an answer, a few weeks after, he stated that he had found some contraction at the meatus and had divided it, but with no effect upon the deeper trouble. May 12 he called with his patient. Examination showed contraction at the meatus not fully divided. Twenty-nine f. only would pass, while the normal urethra was at least 31 f. Two other strictures were detected, at two inches, with 29 bulb. Twenty-nine solid steel sound was readily passed to the bulb, and notwithstanding gentle pressure for several minutes against the face of the stricture, it would not advance. I then divided the stricture at the meatus freely, also the deeper bands, immediately following which a 31 solid sound passed, without the least resistance, through into the bladder.

CASE VI.—W. W., a surgeon of this city, aged 62, came to me in the evening of December 18th, suffering from an attack of retention of urine. He was in a state of great nervous excitement, and was bleeding, somewhat freely, from the urethra, as a result of attempted

passage of instrument. His history was as follows: First gonorrhœa at 19 (1832,) repeated attacks up to 1857, at about which time he began to experience some difficulty in urinating. This, within a short time, became so marked that he sought assistance from a surgeon of great experience and skill. He was found, after a careful examination, to have an organic stricture at the bulbo-membranous junction, size No. 3 of the English scale. During the following three months he was systematically treated by the use of flexible bougies, until No. 12 of the English scale (17 f.) was reached. The solid steel sound was then substituted, and he was directed to use it three or four times a month, *as long as he lived*. He did so for a few months, and then neglected it for a year; when, his urination becoming very slow and troublesome, he attempted to pass his No. 12. He succeeded, by patient effort, in making a false passage, but failed in entering the bladder. He then recommenced with No. 2, and dilated his urethra gradually, in a few weeks, to No. 12 again. The habitual, semi-monthly use of this size was kept up for the next 15 years, and up to three years since. He then increased the interval to one month, until finding, after often waiting half an hour at a time, that he was obliged to use gradually decreasing sizes, down to No. 5, and besides suffering much from frequency and urgency in micturition, he became discouraged with his efforts, and concluded to do no more, until an attack or retention (with which latterly he had often been threatened) should occur. In this event, he proposed to have the canal restored by a cutting operation. For the past five years he had suffered with frequent chills and fevers, which, notwithstanding a full treatment by quinine and arsenic, he failed to cure. He was habitually passing his water in a small irregular stream, every 30 minutes, on the average, during the day, and five or six times during the night. A cursory examination showed that there was no great amount of water in the bladder. In view of the injury that had already been done to the urethra, and the probability that there was a fresh false passage, I prescribed tr.

mur. ferri., in 10 drop doses every hour, a suppository of morphia sulph. $\frac{1}{4}$ gr., and rest in bed, assuring him that there was no serious trouble, and that, in case his retention gave him pain during the night, I would at once come and give him relief.

I neither saw nor heard from the doctor until Christmas Day, just one week from the date of his previous visit. He then presented, in very good general condition, and stated after leaving me with his retention, he went home, passed a good night, and in the morning urinated as usual (except in larger quantity), and since then had been about as before the attack. He had now come to ask an engagement for the radical operation on his stricture.

It was with the greatest reluctance that he consented to an examination, on account of his apprehension of pain. He was certain of the locality and extent of his stricture, and begged that the examination and operation should be done both at once, when under ether. The circumference of the penis was three and a half inches, indicating a normal urethral calibre of at least 34. of the French scale. Size of meatus, 28 f. I then, with assurance of desisting at the least discomfort, began the gentle introduction of 28 f. conical steel sound. As the instrument passed along the pendulous urethra, it was distinctly resisted in its advance and grasped at a number of points, finally reaching the membranous portion. At a moment when his attention was purposely distracted from his urethra, I slipped the sound easily, and without the least force, *through it and well into the bladder*. The blank astonishment of the doctor may be better imagined than described. On the removal of the sound (which in the act of so doing was closely held), he exclaimed: "So this is the organic stricture I have been systematically dilating, and making false passages around, for the last 20 years! It is impossible. Why should my stream be always so small and my urination be so frequent? Doctor" (with alarm), "are you quite sure that the instrument *did not go through a false passage and into the abdominal cavity?*" I then demonstrated, by means of a 28 f. bulbous sound,

the presence of a stricture half an inch in length, commencing at the external opening of the urethra. I explained the occurrence of the frequency and difficulty of micturition, and the resistance to instruments, by attributing it to a *reflection of the irritation from the point of true stricture at the meatus, to the compressores urethra*; this, causing a firm, persistent closure of the urethra, at the membranous portion, as often and as long as urine was brought in contact with it, or instrumental passage attempted. In an examination with the urethra-meter, I found two more bands of stricture, at two and a half inches, of the value of 30 f. It was, however, to the single stricture, at the meatus, that I attributed spasmodic trouble.

January 10.—Dr. ——— presented for an operation on the anterior stricture. Present, by my invitation, Prof. Willard Parker, Dr. Gurdon Buck (to whom the patient was professionally well known), Drs. Stimson and W. Parker, Jr. The history of the case was recounted, and the difficulty claimed to be dependent upon irritation, reflected from the anterior stricture alone. Local anæsthesia by the spray of ether was induced by my assistant, Dr. Fox. I then divided the stricture thoroughly, and introduced 34 f. bulbous sound through it, and down to the first slight contraction at at two inches; size 30 f. Thirty f. solid steel sound was passed easily to the bulbo-membranous junction, when it caught, evidently in a false passage; 28 f., with slightly different curve, was then passed easily into the bladder; 30 f., of same curve, followed it without difficulty.

Up to the hour of the operation, the patient passed his water at least every half hour, on the average. Subsequent to it, he did not pass it for 10 hours, and then in full, steady stream. At the end of a month, when I saw him, his average interval between the acts of urination was eight hours.

LESSON LXIV.

URETHRISMUS, OR CHRONIC SPASMODIC STRICTURE, CONTINUED.

Points in the cases previously cited which prove the possibility of chronic spasmodic stricture to simulate true organic stricture—Cases previously cited, types of a class—Other means of diagnosis than those previously in use necessary to correct appreciation of the nature of urethral obstructions to the passage of instruments—Knowledge of the normal capacity of the urethra a prerequisite—Size and condition of the meatus urinarius essential to be appreciated—Spasm often persists under apparently complete anæsthesia—No reliable examination possible while anterior strictures are present—No treatment for close, deep stricture by operation justifiable until anterior strictures are removed—The presence of slight anterior stricture always capable of causing spasmodic closure of the membranous urethra—Simulating organic stricture.

There are several points in the foregoing cases (which I think may be fairly claimed as types of a class) which coincide with the accepted characteristics of true, deep organic stricture, and which, if not appreciated, would lead, of necessity, to an erroneous diagnosis, such as was originally made in each one of the cases reported.

1. A *gradual* diminution of the stream of urine.
2. *Persistent* frequency of micturition.
3. *Persistent* resistance to the introduction of *large* instruments *in the hands of skilled surgeons*.
4. Distinct grasping of small instruments, and a *gradual* toleration of instruments of increasing size, and, in this, so *perfectly* simulating the behavior of true organic stricture that the most skilled and learned surgeons have been deceived by these conditions.
5. The *persistence*, during a long period of years, of all symptoms which are recognized by authorities as characteristic of *organic stricture*.

"The grand distinguishing feature," says Sir Henry Thompson,* "which marks the phenomena (of spasm-

*Op. cit., p. 140.

dic strictures), and by which they are contrasted with organic strictures, is their *transitory character*." So says, in effect, Mr. Erichsen, Dr. Bumstead, Drs. Van Buren and Keyes, Drs. Stilling, Dittel, etc., leading teachers and authorities in such matters.

Now, if this is *not the fact* (and that it is not, the cases cited go to prove), it will be readily seen that those surgeons who differentiate organic from spasmodic strictures by what is claimed to be "the *distinguishing feature*, viz. the *transitory character of spasmodic stricture*," are liable to fall into the grave error of treating a reflex urethral spasm for organic stricture. It is not at all likely that the six cases I have reported, in which this error was made (in *four* cases by *none* who did not fully understand and appreciate *all the points* which Sir Henry Thompson and Mr. Erichsen and others so explicitly lay down for guidance in such cases), I say it is not *likely* that these are *all* the cases in which such errors have occurred, or are likely to occur. They are *types of a class*, and a large one too, which will necessitate the acceptance of *other* means of diagnosis than those now in vogue, before such errors can with certainty be avoided. First of these, is the necessary knowledge of the *normal calibre* of the urethra, in which symptoms of stricture are present; second, *the size and condition of the external opening*. If the measurements of these two points do not completely correspond, there is reason to believe that a reflex irritation may be present, which has the power of obscuring diagnosis. If there is a stricture, at or near the meatus urinarius, acquired through a previous gonorrhœa or of congenital origin, contact of urine with the sensitive mucous surface (which is always present behind such stricture), or contact of exploring instruments, is capable of exciting a spasm at the membranous portion of the urethra; a spasm which will often *persist* even when the patient is fully anæsthetized; and will continue up to the time that a *complete* division of the stricture is effected.

It may, I think, be safely claimed that no reliable examination of the deeper urethra can ever be made while

a *stricture*, or even an *erosion*,* is present in the anterior portion of the canal. Inferentially, then, no *treatment* of deep stricture, *per se*, should be attempted, until the *complete* freedom from organic contraction of the anterior portions of the urethra, is established. A long series of careful observation of the urethral calibre (by the aid of the *urethra-meter*), have conclusively demonstrated a nearly uniform relation between the size of the urethra and that of the penis in which it is located. As I have stated in other papers on this subject, that the circumference of the presenting penis being three inches, the normal urethral calibre will correspond to 30 or more of the French scale; if three and one-fourth, to 32 or more; if three and one-half, to 34 or more; if three and three-fourths, to 36 or more; if four, to 38 or more; if four and one-fourth, to 40 or *more*.

When the *urethra-meter* is not available, a urethral calibre based upon these calculations may be implicitly relied upon, as not over estimated; on the contrary, it will often be found one or more millimetres below. Urethral examinations with a *bulbous sound*, corresponding in size to the normal urethral calibre, *alone* can demonstrate complete freedom from stricture in any given case. The presence of the slightest contraction at any point may be accepted as capable of producing reflex irritation, which may result in spasmodic contraction, which shall possess all the recognized characteristics of a deep organic stricture.

*Thompson, op. cit., p. 132.

LESSON LXV.

PERSISTENT RECURRING REFLEX SPASM OF THE BLADDER.

Clinical cases of persistent reflex spasm of the bladder—Disease of the spine a possible cause—Clinical case in illustration—Encysted stone a cause of persistently recurring spasm of the bladder, and other reflex symptoms—Clinical case in illustration—Description of operation for the relief of the same—Removal of the stone—Method of operation—Favorable results—Rarity of encysted stone—Sir Henry Thompson's experience—Contrivance for facilitating examinations of the bladder through a perineal opening.

As introductory to the subject of persistently recurring spasm of the bladder, I desire to cite a few instances, illustrative of some of the possible sources of error in the diagnosis and treatment of urinary difficulties, when this is a prominent symptom.

CASE I. *Pott's Disease of the Spine Causing Reflected Irritation and Disease of Genito-Urinary Apparatus, and Persistent Spasm of the Bladder.*—A gentleman sent for me to see him, at Lake George, in July, 1874. He had been a subject of hip-joint disease in his youth, and he was then forty years of age. For the previous fifteen years he had been what might be almost considered an athlete, having cultivated his muscular power to a very remarkable extent, notwithstanding his lameness. He had been rowing a certain day, as was his custom, for several hours, when he was somewhat suddenly taken with a desire to pass water, and this continued at intervals of half an hour to an hour for several days, at the end of which time I was sent for. The urine was normal in appearance, with no deposit, and there was some straining after micturition. Upon examination of the bladder nothing was found to account for the symptoms. The difficulty of urinating continued without cessation for two years, except when temporarily relieved by the administration of narcotics. At this latter time he had come to have a considerable amount of catarrhal inflammation of the bladder, which had come on very gradually. He had never had any gonorrhœa, nor any

other disease of the genito-urinary apparatus. At the time referred to, he was seen, in consultation, by Prof. Thos. M. Markoe. The patient had some occasional discharges of blood after micturition, after which discharges, he would have relief from the pain which preceded these attacks. Having considerable catarrhal trouble, and some considerable pus in the urine, it was thought probable that he had stone in the bladder. He was put under the influence of ether, and examined for stone, but with negative results. His difficulty then went on increasing, and having found a very large quantity of calcareous matter, the idea of calculous disease was confirmed, and the supposition entertained that possibly the stone was enclosed in a pouch of the bladder. The case went on for another year with very little change. He was treated with different narcotics and sedatives in order to relieve the great irritation, which not only was shown in his frequent urination, but which extended throughout the urethral canal.

About the third year of his trouble the late Prof. Wm. H. Van Buren saw him with me, and at first was of the opinion that he had stone, but this opinion was disproved by examination, and still his symptoms went on. The spasm at the neck of the bladder was then terrific, and would occur as often as every ten minutes. His life seemed to be one prolonged torture. Sometimes he would have an interval of half an hour of freedom from pain, but these intervals were by no means frequent.

Two years ago, three years after the commencement of his trouble, making occasional examinations of the urine, I found that there was more or less epithelial matter from the ureters and from the pelvis of the kidney. I urged an operation for the stone which I supposed to be present. Believing this to be the only method by which his life might be prolonged, Drs. Van Buren, Gouley, and Markoe were called in consultation, and it was decided to operate, although there was very great doubt as to the presence of stone. It was hoped that the irritation would be allayed by affording free escape to the urine, even if no stone were present. The median operation was accordingly performed by

Dr. Gouley in the presence of Drs. Van Buren, Markoe, and myself. Much to our disappointment no stone or other foreign material was found. After the operation, however, he improved somewhat. Although he did well for several months, he failed to regain comfortable health. For about a year, notwithstanding he went through what in any one else might be considered great suffering, he was comparatively comfortable. After a summer in the country, on arriving home I was sent for to see him. I found him exceedingly comfortable. He had complete relief from his bladder trouble, and was only passing his water once every three or four hours. This seemed very strange to me. His wife mentioned at the time in a very casual way, that she thought he had an extra lump in his back. He assured me, however, that it had existed for a very long time. I found, on examination, about the region of the seventh or eighth dorsal vertebra, a distinct projection, and it seemed to me that it was evidently the result of Pott's disease of the spine. He had previously complained of a great deal of pain in the back, but it had been located in the region of the kidney, and was supposed to be connected with his general trouble. I sent at once for Dr. Van Buren, and he agreed with me fully in regard to the presence of spinal trouble, and it was decided to place him under the care of Dr. Charles F. Taylor. Dr. Taylor then became connected with the case, and was decidedly of the opinion that it was one for treatment by his method of support, and applied an instrument which he adapted to the spine. This treatment was continued for some months; but he became very restless and uneasy, and his trouble in urination came back. At the time this trouble left him the pain which he experienced lower down became localized just above the hips in a plane with their top. He was finally put upon a water-bed, but after a month more of trial with the instrument it was found impossible to wear it. Just about that time a diarrhœa came on, was very profuse and obstinate for a week, and ceased apparently of its own accord. Then his bladder trouble increased again, and was attended with severe spasmodic pains during micturi-

tion, which pains were mostly situated at the neck of the bladder and at the end of the penis. Within two or three days before his death he obtained some relief to the pains by the application of snow to the end of the penis. After a few weeks more of suffering he died, apparently from uræmic convulsion.

A post-mortem examination revealed first a half pint of laudable-looking pus in the cavity of the peritoneum, which pus was found connected, underneath the sheath of the psoas muscle, with two abscesses located upon the left side of the spine, in the neighborhood of the eighth dorsal vertebra, at which situation the posterior surface of the left lung was adherent. This condition explained a very distressing cough from which he suffered during the last few months of his life. The right kidney was found to be the seat of cystic degeneration. There was no dilatation of the ureter nor any obstruction. The left kidney was three or four times larger than the right, was the seat of waxy degeneration, and the subject of pyonephritis to a very considerable extent. A large portion of the kidney was involved in ulceration. There was a collection of purulent material which extended more or less throughout the calices. The bladder was thickened and contracted, but there was no evidence of any ulcerative trouble; there was no evidence of any urethral contraction. There was no stone in the bladder, but there was an admirable cul-de-sac on which to conceal one. One testicle was atrophied, the other considerably enlarged, and its inferior portion was the seat of a disease the gross appearances of which were quite characteristic of tuberculous disease.

CASE II.—Mr. C——, a miner, forty-one years of age, from Scranton, was sent to me by Dr. M. J. Williams, of Hyde Park, Pa., March 2, 1882, with a history of urinary troubles, dating back to a gonorrhœa some eighteen or nineteen years previous. This gave him much trouble for several months; then, after an interval of some years, he suffered with other troubles, which were considered due to the passage of urinary calculi, and he subsequently passed three small specimens per urethram. Again free from any special urinary trouble

for several years, he began once more to be afflicted with pain in the region of the kidneys, frequent urination, and finally inflammation of the bladder and retention of urine. He was treated for stricture by dilatation, and, finally, by divulsion, without benefit. He suffered greatly from frequent and painful urination, with pain in the glans penis and great irritation in the rectum. He was repeatedly examined for stone in the bladder, but none was ever detected. For ten months previous, his sufferings had been constant and intense, passing his urine every few minutes during the day and several times during the night, the stream shutting off suddenly, as if something had dropped down at a certain point in his urination, and closed the vesical orifice. Repeated examinations of the bladder failed to detect either the presence of stone or a polypoid growth. The patient was subjected to all the usual and some unusual procedures for disengaging any possible hidden or sacculated stone. The prostate was slightly enlarged, chiefly on the right side, and this was the only abnormal point ascertained about the genito-urinary apparatus.

In view of the history of the case pointing to probable stone in the bladder, and the symptoms distinctly indicating what seemed to be a movable obstacle to urination, such as a polypoid growth within the bladder or an encysted or otherwise hidden stone, an exploratory operation was determined upon. On Friday, March 10, 1882, the patient was etherized, and the median section for stone was performed. Through the opening thus secured, the prostate and bladder were explored with the forefinger of either hand successively, but without finding anything abnormal. The examination was repeated by my associate, Dr. Bangs, and also by Dr. Williams, of Pennsylvania, who was present and assisting in the operation, and with like negative results. The bladder was then carefully explored with sounds, but no stone was detected. Just as we were in despair of achieving any beneficial result from the operation, I again introduced my left forefinger to the utmost limit, gaining, perhaps, by urgent

pressure, a quarter of an inch in the depth of exploration, when a soft, apparently pendulous body, about the size of an ordinary bean, was felt by the tip end of the finger on the left side of the bladder. The conditions thus appreciated are represented by the accompanying diagram.

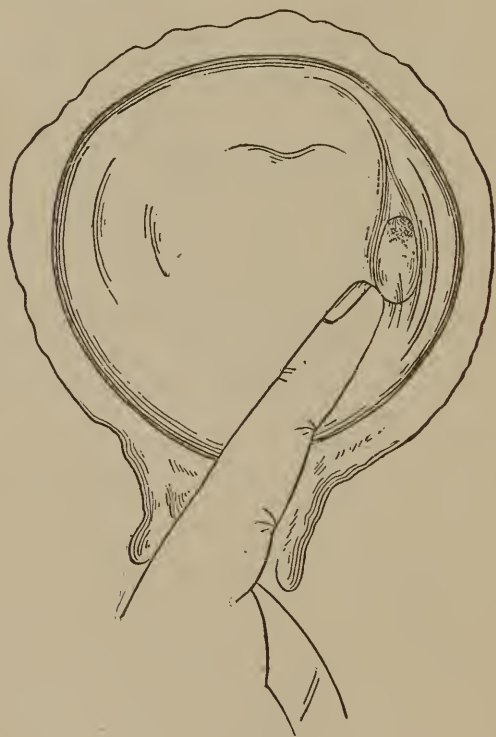


FIG. 13.

A pair of narrow forceps was then introduced, and the supposed tumor was seized in about one-half inch grasp, and twisted gently entirely around. As it still held, the forceps were disengaged and the finger again introduced. The tumor could no longer be felt in its former locality, but, on searching the floor of the blad-

der, it was again detected, and on introduction of a pair of duck-billed forceps, what appeared to be a firm clot of blood was removed. This, on examination proved to contain a stone about three-fourths of an inch in length by one-half inch in breadth and three-eighths in thickness. The surface of the apex was smooth and light-colored for about one-fourth of an inch, while the remainder was dark-colored and rough, apparently marking the encysted or sacculated portion, as may be seen in the specimen which is here presented, as well as in the accompanying photograph.



FIG. 14.—ACTUAL SIZE.

After thorough irrigation a large, soft catheter was introduced into the bladder through the perineal opening and left in, the proximal extremity of the catheter being fastened into a male urinal. The patient did not experience a single unfavorable result. All pain and difficulty about the bladder was removed. The urine flowed freely into the catheter. There was no rise of pulse or temperature. The catheter was removed on the third day. On the fourth the patient began to urinate through the urethra. On the fifth he no longer passed any urine through the wound. A No. 34 French sound was passed every other day through the urethra and well into the bladder. By the ninth day the wound of operation was healed, the urine was free from pus as a sediment, every symptom of former troubles had disappeared, and on the morning of the tenth day he left for his home in Scranton, apparently well in every respect. Several months after he was heard from as in perfect health.

Encysted calculi are fortunately rare. Several interesting examples are cited in Sir Henry Thompson's recent edition (1880) of his work on "Practical Lithotomy and Lithotrity," page 93 et sequitur. "A calculus," he says, "may be altogether contained in a cyst in the bladder, a small part of its surface only being exposed at the mouth of the cyst." "I had the opportunity," he further says, "of watching at University College Hospital one example of this, which was once,

and only once, struck with a sound during life, although the sounding was repeatedly performed. . . . At death the condition described was found, and it was then obvious that the chance of striking such a calculus was exceedingly remote, and that no operation could have removed it." In the present case a distinct click was appreciated during exploration of the bladder on two separate occasions, in just the locality where the stone was subsequently found, but as this could not be repeated, it was referred to some accidental sound outside the bladder. The difficulty of thoroughly exploring the bladder with the unaided finger became painfully apparent in this case, where failure and success in diagnosis was seen to have depended upon but one fourth



FIG. 15.

of an inch in the length of the finger. This fact suggested the desirability of some ready method by which the finger might be efficiently supplemented under similar circumstances. The accompanying contrivance for lengthening the right forefinger may be readily constructed of ordinary copper wire, and will, I think, answer the desired purpose.

But for the rare fortune of finally discovering this encysted stone, in all probability the trouble would have been relegated to the list of obscure reflex nervous disorders dependent upon urethral, spinal, or rectal causes, until a post-mortem examination should have revealed the true nature of the difficulty. It must not be forgotten, however, that symptoms almost, if not

perfectly identical with those of stone in the bladder, in certain cases, may arise from reflex causes quite independent of the presence of stone in the bladder, free or encysted.

It may not be irrelevant to our purpose here to cite a single instance in point, which was published by me in the *Hospital Gazette* of June 22, 1879, but which has now the added interest of nearly three years' subsequent experience :

LESSON LXVI.

Clinical case illustrating the influence of spasmodic stricture in producing symptoms of enlargement of the prostate gland—Treatment addressed to the spasmodic cause successful in permanently curing the difficulty—Clinical case illustrating the influence of a contracted meatus urinarius in producing persistent spasm of the bladder and urethra—Simulating stone in the bladder and disease of the kidney—Eminent authorities at fault for more than twenty years—Final relief of spasm through division of the anterior contraction—Post-mortem appearances—Proving conclusively that the difficulty was due solely to the influence of a contracted meatus urinarius—Persistently recurring spasm of the bladder during a period of over twenty years, resulting in thickening of its walls, dilatation of the ureters, and hydronephrosis—Death from uræmia—Cause, a contracted meatus urinarius.

CASE III.—Mr. W——, sixty-four years of age, came under my observation December 25, 1876, with the following letter from his family physician: "Mr. W—— is suffering from enlarged prostate gland and the symptoms which usually accompany that condition of things, and his trouble has been coming on for some time past—difficulty in passing urine, pain, and straining, requiring use of catheter. Treatment has been: use of catheter, warm hip-baths, suppositories of opium and belladonna, laxatives, infus. buchu, mur. tr. iron, as the symptoms from time to time indicated, with regulation of diet, etc." From the patient I gleaned the following: Never had gonorrhœa. First trouble of urinary apparatus was an attack of dysuria March, 1875, without any apparent cause, except, perhaps, drinking largely of carbonic acid water; lasted nearly a day, and passed off without treatment. Second, four months after, similar to first; quite well in the interval. Again free for a month, when urinations became gradually more frequent during day, and obliged him to rise four or five times during the night; walking gave him relief. Finally had a retention of urine, lasting, with much suffering, for twelve hours. Introduction of catheter resisted. Dr. Stephen Smith (visiting physician to Bellevue and

St. Vincent's Hospitals), who was called in consultation, passed a catheter and drew off the urine. From this time, catheter used three times in twenty-four hours. No urine passed voluntarily; great urgency and frequent agonizing pain before passing catheter; great straining, involving diaphragm and abdominal muscles. This condition continued up to the date mentioned, December 25, 1876.

Examination of prostate by me shows but *slight, if any enlargement*. Ordinary catheter passes in without force. Urine drawn is thick with pus and mucus.

Examination of penis: Circumference, $3\frac{3}{4}$ inches; meatus, 32; size of urethra, 36 mm. from meatus to bulbo-membranous junction, as shown by urethrometer. Quiet and infus. triticum repens prescribed. January 2, careful examination made for stone; none found. Bladder irrigated with solution of borax twice a day. Examination of several specimens of urine showed nothing but catarrhal elements. No abnormal condition could be detected about the neck of bladder, and yet the patient could pass no urine voluntarily, and as soon as he made the effort, tenesmus of the vesical neck came on, which gave great distress.

Passing urine every two hours through catheter, which he had been taught to introduce. Having seen cases of somewhat similar character, and unable to find any cause for the trouble, except a spasmodic one, *I introduced with great care, bearing in mind the importance of such a procedure in a man of his age, and suffering with disease of the bladder*, a No. 32 solid steel sound, without force, through the entire urethra. I then followed it quickly with No. 34, in order to over-distend the membranous urethra, which I believed to be the seat of the trouble. A few minutes after, Mr. W—— was seized with his accustomed desire to urinate, rushed into an adjoining closet and introduced his catheter as usual. Returning somewhat hurriedly to resume conversation thus suddenly broken off, in two or three minutes he again felt desire to urinate, and believing that his bladder had been emptied, simply took up the chamber, without any idea of urinating, when, to his infinite

astonishment and delight, he passed with perfect ease over a gill of urine. This was the first passed voluntarily since first relieved of his retention by Dr. Stephen Smith. From this time Mr. W—— passed his urine *without the aid of a catheter*, on an average of every two hours for the next four days, introducing the catheter only night and morning for the purposes of irrigation. Great and rapid improvement in health and entire freedom from straining and tenesmus.

January 4th.—To carry out the treatment by *over-distention*, more fully, I incised the meatus to 36 mm., the pre-ascertained normal calibre of the urethra, passed a No. 36 solid steel sound with complete ease through the entire urethra and well into the bladder.

From that time the recovery from cystitis was rapid, and urine was passed voluntarily and in full stream up to October 18th (over nine months), when the patient called to say that he had remained quite well up to two weeks previously, not having in the interval to rise during the entire night to urinate; but that, since then, having taken cold by sitting on a cold stone, his urine had presented some sediment, and his urination was with increased frequency. The only treatment (aside from infus. triticum repens), was by introduction of a No. 33 solid sound.

October 19th.—Mr. W—— called to say that the irritation at neck of bladder, and referred to end of penis, disappeared at once on introduction of the sound the day previous. Intervals of urination increased to between three and four hours, rising only once during the night. Recovery from the vesical catarrh, which was but slight, was complete within the week, and Mr. W., who is still under my observation in a general way, has been entirely well of his urinary trouble from that date to the present, over six years.

In this case, in the absence of any prostatic enlargement or discovery of any polypoid growth, the evidences of hidden stone were most marked until the passage of full-sized sound, which promptly demonstrated the reflex nature of the difficulty.

CASE IV.—Mr. Z——, fifty-seven years of age, had suffered from frequent, difficult, and more or less painful urination for over twenty years. His earliest trouble with the genito-urinary apparatus was an acute urethritis, which soon merging into a chronic form lasted for some years, during which he was treated for urethral stricture by several surgeons. Subsequently he came under the care of a distinguished physician of New York City. At this time he was suffering from frequent micturition and other troubles of the genito-urinary apparatus, which suggested possible presence of stone in the bladder, a search for which proving unsuccessful, the patient was referred to an eminent surgeon (this was in 1860), who also failed to find any calculus, and treated him for some time by local and general measures for his cystitis, with varying success. The frequent and painful urination continued, however, and he came under the care of various surgeons, and physicians, regular and irregular. He was at one time under the care of Sir Henry Thompson of London, who also examined him for stone in the bladder, but found none. M. Civiale, of Paris, also made a most exhaustive examination with the same negative result. The patient, in relating his experience with M. Civiale said: "I was unfortunate enough to arrive in Paris just after an important personage who had suffered from symptoms of stone, and had been examined by many surgeons without detecting any stone, had been referred to M. Civiale. After a long and careful search Civiale found and removed a very small, rough calculus. With this success fresh in his mind, he examined my bladder with such thoroughness that I was confined to my bed for six weeks after—but he found no stone." His frequent and painful urination continued unrelieved, and his urine, at times bloody and always with more or less pus, was passed every hour, or oftener, for several years. Treatment in great variety had been used under the advice of eminent surgeons and medical men of every school. Patent medicines, medicinal waters, and spiritualistic agencies had all been tried without avail. Everything, he said,

that had ever been attempted for his relief, instrumental, local, or medicinal, had signally failed, and for the few years past he had been under the general care of Dr. M——. His sufferings increased to such an extent, that surgical aid seemed imperatively called for. He was referred to a surgeon eminent in genito-urinary matters, who also failing to find any stone to account for the cystitis, treated it by repeated washings and the occasional passage of a No. 26 sound into the bladder; which latter procedure, the patient stated, was the only thing that had ever been done for him that appeared to do him any good.

After a time his sufferings increased and became complicated with malarious symptoms. He was then greatly debilitated, and in almost constant suffering with his urinary difficulty, when I was called to see him. His general appearance was that of a man suffering from malignant disease. His urination, which occurred regularly at intervals of about fifteen minutes, was one continued agonizing spasm for about two minutes at each act. The spasm, he said, was less frequent and less severe at night. He complained also of severe pain in the region of the left kidney. This, he said, he had had from time to time for a long period, and surgeons had universally attributed it to the presence of a stone in the kidney. Frequent examinations of his urine had failed to detect any organic disease of the kidney. A large quantity of epithelium from the bladder had, at one time, suggested the possibility of epithelioma of the bladder; cancer had also been suggested. The pains during micturition were always referred to the region of the neck of the bladder, pubis, and perineum. He had never had any pain in the glans penis, nor was his trouble aggravated by motion, or in a carriage. He suffered only during urination. He had long worn a urinal. Diet, chiefly of milk. On December 30, 1881, I was called in consultation by Dr. Lewis Fisher, the family physician, and obtained the following particulars of the case: On December 31, a careful examination failed to discover any evidences of organic disease in the thoracic or abdominal regions.

The penis showed a circumference of three and three-fourths inches and a urethral orifice of 25 French. Examination with the urethrometer showed a normal calibre of 37 French from the bulbo-membranous junction to within three-fourths of an inch of the urethral orifice, where the canal suddenly narrowed to 26 French, registering the same to the orifice, where it was 25 French. The repeated examinations of the bladder (some quite recent) by distinguished surgeons, together with the entire absence of pain in the glans penis, or any sudden stoppage of urine during the act of urination, satisfied me that if there was any stone in the bladder it was encysted, and probably would not be discovered by the use of the sound. The case seemed to me one where the spasm of the bladder, occurring with great frequency and severity through such a long period of time—then over twenty years—must have ended his existence long before if due to organic disease of the spine or kidneys; and no evidence of any organic disease being present, I suggested the possibility of the difficulty being in a measure, if not wholly, of reflex origin, and due to the irritation of the contracted and thickened urethral orifice, and proposed to test the truth of it by dividing the meatus so as to make it correspond completely with the remaining portion of the canal. To this the patient finally consented.

Operation, Sunday, January 1.—Patient brought under the influence of ether by Dr. Bangs. I then made a division of meatus and tissues extending three-fourths of an inch back, from 25 mm. to 38 mm., and passed a No. 37 solid sound well in the bladder without the least force. Following this, there was absolute incontinence, the urine passing away without pain, and almost without consciousness. This condition of things continued without especial change until Wednesday, the 4th inst., when he had some slight power to retain his urine, and for the first time a twinge of pain. He remarked that the second night after the operation he had the best night's sleep he had had for ten years. His habitual hypodermic dose of morphia had been omitted up to

Wednesday, when, in the early evening, an attack of the kidney colic (left side) which he had previously suffered from, came on, and with such violence that Dr. Fisher was sent for, and administered ten drops of morphia hypodermically. A comfortable night's rest resulted. On Thursday morning, the patient appeared in good condition, passing urine without pain. Thursday night he had another attack of pain in the kidney requiring another hypodermic injection. Another comfortable night. The next day (Friday) he felt miserably, little or no appetite, consciousness of desire to urinate every half hour, some slight control and some pain, *now, and for the first time in the history of the case, referred especially to the end of the penis.* Never before had any pain at the head of the penis. The pain, previous to operation, was always and solely referred to the neck of the bladder. Took no morphia; staid in bed all day. Last night, suffered from pain in head of penis whenever he attempted to urinate, but, when he checked the effort, the urine would flow without pain. In all, had about six attacks of the pain referred to during the night. To-day, Saturday, January 7th, feels weak; no appetite; urinates about every half hour. Now, at 1.40, has not passed urine for forty minutes. Urine under better control. While dressing this morning he had two or three slight urinations during the hour, with quite sharp spasms of pain in the head of the penis. Since then the spasms of pain have been less in degree and frequency. Pus and mucus, which heavily loaded the urine at the date of the operation, have distinctly and steadily decreased up to the present time. Held urine for fifty minutes, and then urinated voluntarily without pain, but very slowly. After this, passed No. 37 bulb through the meatus only (and this simply to keep it patent), but with less pain than anticipated, and less that at any time before. The bladder, which was washed out with warm salt water twice a day before operation, has not been touched since that date. Advise to have this resumed to-day. Milk diet.

January 8th.—Had a poor night. Frequent and severe spasms extending from head of the penis to the

bladder, was greatly weakened by them; occurring twenty or twenty-five times during the night. These lasted two to three minutes, and were always excited by the effort to pass water, passing only half an ounce at a time. Yesterday, washed out the bladder about 5 P.M. with no special effort. This pain in the head of the penis is quite new, and was not felt at any time before the operation, and not until five days after, when it came on suddenly. Much of the increased nervousness appears to be due to reaction from morphine. Spasms have been less for the last three hours, and has once passed water without spasm. Has taken no morphia since night before last, when he had ten drops of hypodermic injection. Now takes an injection of six drops. Says that effect of this will last to make him comfortable until to-morrow.

January 9th.—Has had a better night, only half a dozen spasms. This morning apparently under the influence of morphia, most probably uræmia, as he had only five drops last evening. Urine quite thick with pus, and has passed a full pint since 7.30 this A.M. Complains of great exhaustion, but is evidently so uræmic that not much can be inferred from what he says. At 2.50, he had a severe paroxysm, about one and a half minutes' pain in bladder. At 3.15, another. At 4.30 Dr. Fisher gave him rectal injection of peptonized beef. He continued in somnolent condition, but less profound. Frequency of urinations as follows, 10.5, 11, and 11.45, the last being accompanied by great pain.

January 10th.—Urinated with great pain every hour, sometimes oftener. After pain stopped, dropped off to sleep, but could be roused easily. Attempted to give beef enema, but he refused to have it.

Died uræmic on the 11th.

CASE IV.—*Autopsy by Dr. Welch.*—By request only the abdominal organs were examined. KIDNEYS.—Both kidneys are enlarged. The fibrous capsule is adherent to the surface of the organs. The cortical substance presents a grayish, nearly uniform appearance, with little trace of the normal markings. The pyramids are in a great

part encroached upon by the dilated calyces. No ab-



FIG. 16.

Outline sketch, from photograph of post-mortem specimen in case of Mr. Z.

scesses are present in the kidneys. The pelvis and calyx of each kidney are greatly dilated, and contain

turbid, ammoniacal urine. The ureters are likewise dilated, so that their calibre nearly equals that of the small intestine. The walls of the ureters are thickened. No obstruction to the passage of urine exists either in the pelvis of the kidneys or in the ureters.

BLADDER.—The wall of the bladder is thickened to about four times its normal diameter. This thickening affects all of the coats of the bladder, but especially the muscular tissue. The mucous membrane of the bladder is thickened, and presents in many places, especially about the base, slight elevated, grayish, discolored patches, such as are seen in the so-called diphtheritic cystitis. The capacity of the bladder is about that of the normal organ. Its contents are ammoniacal, purulent urine, and a small calculus. This calculus is about an inch in length and conical in shape, resembling in form somewhat a canine tooth. Such a calculus might have been formed in one of the dilated renal calyces. The calculus is apparently of recent formation, being very friable and composed wholly of phosphates, without a nucleus of uric acid or oxalate of lime, as was shown by chemical examination.

URETHRA AND PROSTATE.—The prostate was of about normal size and had not occasioned any obstruction so far as could be detected. The calibre of the urethra seemed normal, presenting no evidences of stricture.

SPLEEN.—The spleen is somewhat enlarged and surrounded by firm, fibrous adhesions. The liver, stomach, and intestines present no noticeable change. The microscopical examination of the kidneys show a marked new growth of fibrillated connective tissue, which is infiltrated with lymphoid cells. The uriniferous tubes are, in places, compressed and atrophied, in places dilated, in places filled with fatty epithelium.

Diagnosis.—Chronic cystitis with dilatation of the ureters, hydronephrosis and chronic interstitial nephritis. The cause of the cystitis is not apparent."

We have, then, here conditions which are not explained by anything found in the kidneys, ureters, or bladder. The cause of the hypertrophy of the bladder walls, the dilatation of the ureters, the dilation of the kid-

ney, and the interstitial nephritis would have been plain had a mechanical obstruction to the flow of urine been discovered, but none was apparent: it was certainly not in the kidney, ureters, or bladder. At every period in the progress of the case, sounds passed easily into the bladder. There was therefore no apparent mechanical obstacle in the urethra, and yet the conditions were such as to demand a mechanical obstruction to the exit of urine from the bladder to account for their existence. It appears to me that the only possible solution of the difficulty is through the claim of a persistently recurring spasmodic closure of the orifice of the bladder, *as a result of irritation reflected from some point in the urethra*. The examination of the urethra on December 31st showed a normal urethral calibre of 38 mm., except at the orifice, where this and one-half inch of the canal was contracted to 25 French, thus showing an obstruction, practically a stricture of 13 mm. In this connection it is interesting to recall the fact that in the very early history of the case there was a persistent urethral discharge, and that he was treated for urethral stricture by several surgeons.

The possible influence of a contracted meatus urinaris in producing, in certain cases, disturbance more or less grave throughout the urinary tract has long been known, although not generally appreciated. M. Civiale in his "*Traité Pratique des Maladies Génito-Urinaires*," second edition, Paris, 1850, at page 160 says: "That which has struck me most forcibly in dividing a meatus, often only slightly contracted, is the sudden and complete change effected in the general condition of the patient. The constriction, which seemed hardly to impede the flow of urine, is no sooner divided than all morbid symptoms vanish—the urethral walls, which were rigid, hard, and inelastic, immediately recover the normal condition. The bougie, which at first passed only with difficulty and pain, slips into the bladder with ease, and in five or six days the slight incision at the meatus heals perfectly, and the patient finds himself in a state so satisfactory that it would be incredible but for the fact that the instances are again and again repeated; an

effect so prompt, through means of which the significance is plain, shows that the slightest obstruction in the urethra is able to produce the gravest symptoms, local and general." Again, in 1858, Sir Henry Thompson, in the second edition of his work on "Stricture of the Urethra," page 249, says: "I have given complete relief to distressing symptoms of very long continuance, *the cause of which was not suspected*, by dividing an external meatus, which nevertheless admitted a No. 6 English catheter. I have met," he further remarks, "with three marked examples of a similar kind, in which the very simple operation necessary was followed by a complete disappearance of urinary difficulties, which had long been regarded as of an extremely obscure character." In 1874 a paper was read by me before the New York Academy of Medicine, on "Reflex Irritations throughout the Genito-Urinary Tract, resulting from contraction of the Urethra, at or near the Meatus Urinarius, Congenital or Acquired." In this paper, nineteen cases of this kind were cited, in one of which, Case XVII. (page 26 of monograph on "Reflex Irritation," published by McDivitt, Campbell & Co., and republished in the *Charleston Medical Journal and Review*, of July, 1874), in which frequent micturition of ten years' standing, complicated finally by a grave and prolonged cystitis; this was promptly relieved by the division of a meatus, which readily admitted the passage of a 23 French bulbous sound. Further proof of the capacity of anterior urethral contractions to induce spasm of the urethra and bladder may be seen in my work on "Stricture of Male Urethra," second edition, Putnam's Sons, New York, 1880, page 301 *et seq.*, and in articles on "Urethrimus, or Chronic Spasmodic Stricture," in the *Hospital Gazette* of April 19, 1879, and June 28, 1879. In all the cases reported by Civiale, Sir Henry Thompson, and myself, immediate relief followed division of the contraction.

In the case of Mr. Z——, the subject of this report, relief to the spasm of the bladder supervened immediately, upon the complete division of the contraction at the meatus urinarius, followed by the introduction of a

sound, corresponding in size with the normal calibre of the urethra, as previously determined by measurement with the urethrometer. How much of this relief was due to the passage of the instrument may be a question, but not the least more force was used in its passage than in that of an ordinary sound or catheter through a healthy urethra, and not the least pain was subsequently felt which could be considered a consequence of this procedure. The only result which was in any way different from other cases where a similar operation had been performed was the complete incontinence which followed, and which continued until the fourth day, when slight power of retention was also accompanied by a slight twinge of pain. The recurrence of the spasm of the bladder soon after, as a distinct effect of the sudden advent of the calculus, renders the estimate as to the permanence of relief to the spasm through the operation entirely conjectural. It still remains, however, that the cessation of painful and frequently recurring spasm of many years' standing was immediate and complete, as a result of the operation, and practically so continued until an added mechanical irritation within the bladder reinstated it. The proof that the spasms which came on on the fifth day after the operation procedure were due to the sudden presence of the calculus were, first, that it was for the first time in the history of the case accompanied by a well-defined pain in the glans penis, which persisted until the termination of the case; second, that the calculus was recent, as indicated by its great friability. Its shape contra-indicated its origin within the bladder, but distinctly pointed to one of the calyces of the left kidney, into which it was subsequently shown to fit in the most perfect manner. In the absence, then, of any other means explaining the years of suffering endured by Mr. Z——, or any other way of accounting for the post-mortem conditions presented in his case, it appears to me reasonable to claim that the difficulty was of reflex origin, dependent chiefly, if not wholly, upon the contracted meatus urinaris, and I think we are warranted in believing that, if this condition and its possible effects had been appre-

ciated at an earlier period in his troubles, years of agonizing suffering would have been avoided, and that his life might have been saved through an operation, in a surgical point of view, of the most insignificant possible character. In considering the salient features of the foregoing cases, which I believe to be typical, it must, I think, be admitted that symptomatic evidences of organic idiopathic disease of the bladder and prostate, as well as of stone or other adventitious material in the bladder, should be received with the distinct understanding that such evidences are possibly due entirely, or in part, to sources of irritation quite outside of the organs apparently the subject of disease.

LESSON LXVII.

DIGITAL EXPLORATION OF THE BLADDER, BY MEANS
OF AN INCISION THROUGH THE PERINEUM AS AN
AID TO DIAGNOSIS.

Digital exploration of the bladder, as an aid to diagnosis in obscure cases, recently brought to notice by Sir H. Thompson—The operation not a new one—Reference to cases in the author's experience in support of this statement—Recent discussion of the subject in the Royal Medico-Chirurgical Society of London—No mention made of the possible influence of reflex irritation in producing symptoms simulating encysted stone and other obscure bladder troubles—Source of such irritation frequently referable to disease of the spine, kidneys, urethra, rectum. Clinical case illustrative of its source in the kidney—Another case in proof of same—Clinical case, showing that enlargement of the prostate sometimes exists without the usual prominence in the rectum—Exploratory perineal incision performed—Unfavorable results.

This subject has been recently brought into a deserved prominence through reports of cases, and a discussion of its advantages by Sir Henry Thompson. In his paper before the Royal Medical and Chirurgical Society of London, Jan. 23d, 1883, this procedure is spoken of as "*a new method of investigating obscure diseases of the bladder.*" It is certainly not new in America. The case of obscure difficulty of the bladder related at the beginning of the lesson on persistent spasm of the bladder, is sufficient evidence that it was appreciated here at least ten years previous, and even then it was not new. In that case, it was proposed by me for the purpose of aiding in diagnosis, and after, as was believed, thoroughly exhausting all other means of diagnosis, it was concurred in by all four of the surgeons connected with the case, all of whom were public teachers of Surgery, and three of them occupied the chair of Genito-Urinary Surgery in different colleges in New York. It was not then proposed or considered as a novelty. Case II. was the subject of perineal incision for purposes of diagnosis, operated upon by me march 10th, 1882,

and an encysted stone discovered in this way and removed. This case was published in the *New York Medical Gazette* of April 8th, 1882.

Sir Henry Thompson's first paper on this subject was published in the *London Lancet*, May 6th, 1882, and included directions for the performance of the operation of digital exploration of the bladder through incision of the urethra, thus: "I always adopt the central incision, using a median grooved staff, and a long, straight, narrow-bladed knife with the back blunt to the point. Having placed the left index finger in the rectum, the knife may be introduced, edge upwards, about three quarters of an inch above the anus, with or without a small preliminary incision of the skin, (I prefer the former) until the point reaches the staff, about the apex of the prostrate gland, where it divides the urethra for half an inch or so, and is then drawn out, cutting upwards a little in the act, but so as to avoid any material division of the bulb. The left index finger is now removed from the rectum, and following, by the groove of the staff, slowly passes through the neck of the bladder, as the staff is withdrawn, thus . . . when the exploration is made as described above, thus. . . .

"Taking it for granted that the incisions be made, which involve only the urethra and not at all the bladder and prostrate, enable the operator to place the last joint of his index finger within the neck and thus to draw it somewhat towards him, the exploration may be made in the following manner.

"Maintaining his finger at the spot described, the operator should stand up at the foot of the table, a little to the left of the patient (who is at the lithotomy position), so as to make firm pressure, with the right hand above the pubes, the resistance of the abdominal muscles being overcome by the ether. He may now easily feel, unless the patient be very stout, the opposite side of the bladder coming into contact with the tip of his finger, and by concerted movements of supra-public pressure with the right hand, with slight movements of the left index finger in the bladder, almost every portion of the internal coat of the latter may be brought under ex-

amination. If the patient be thin, the proceeding is easy; it becomes less so, in proportion to the depth of the perineum and thickenings of the supra-pubic coverings, both of which are increased by fat. In the latter case, aid may be rendered by an assistant, who makes firm pressure with both hands; but the operator should also employ, if he can, the concerted movements described."

To Sir Henry, however, should certainly be credited the first description of a systematic and thorough application of the conjoined touch, for physical examination of the bladder, by means of one finger introduced through an incision in the perineal urethra and pressure over the pubis with the disengaged hand of the operator, or both hands of an assistant. In each one of my operations, a similar, but less thorough procedure was adopted, although no mention was made of this in the report of these cases. In the same manner, the conjoined touch has for many years been employed by me in examination of the prostate and bladder, through the rectum, in the position described on page 405 of a preceding lesson.

The prominence given to this matter by presenting it as a new procedure appears to me to favor the trial of it by surgeons not aware that it has long been considered a *dernier resort* by surgeons experienced in genito-urinary diseases, and this before due consideration has been had for measures greatly less perilous in a surgical point of view, and shown to be possibly efficient in clearing up a diagnosis in cases which would otherwise have been considered suitable ones for the exploratory operation through the perineum. The fact that no irritations proceeding from disease of the spine, disease of the kidney, disease of the rectum, or from urethral contractions, either by Sir Henry Thompson in his different papers and reports of cases, nor by any of the distinguished surgeons who discussed the question in the meeting of the Royal Medico-Chirurgical Society, would leave it to be inferred that the operation of cutting into the bladder through the perineum, for diagnostic purposes, had been frequently done without knowledge of the fact, that

cases presenting all the symptoms of tumor of the bladder, and of stone in the bladder, as well as of deep urethral stricture, may be and are quite likely to be dependent upon irritation reflected from the various above-mentioned points, and in an especial manner from the urethra, and which, in the latter case, might promptly disappear on restoration of the urethra to its normal calibre. Reflex irritations, having their origin in a diseased kidney, not differing in the symptoms produced from encysted stone or tumor of the bladder, are by no means rare. Within a year I have operated on such a case by perineal incision. Symptoms of stone had been present for nearly two years previous. The most careful and often repeated explorations for stone had failed to detect anything abnormal in the bladder, and yet there was frequent urination, with spasm at the end of the act; pain in the glans penis; occasional bloody urine and chronic vesical catarrh; all symptoms aggravated by motion, especially by riding in a cart. The man appeared in florid health for a full year and a half, and then depreciated, apparently from loss of rest and suffering caused by spasm of the bladder, which occurred every few minutes night and day. His urethra had been contracted congenitally at the orifice. This was restored to a normal condition by division, and a full-sized instrument passed throughout the entire canal, early in my care of the case, but with slight apparent benefit. Finally, I made the exploratory incision through the perineum, and examined the bladder with my finger. Nothing was found in the bladder to explain the source of the spasm and other symptoms of stone.

The operation gave temporary relief to the spasm, but death occurred from exhaustion through the progress of the disease. The post-mortem examination, which was made by Dr. Peabody, Pathologist of the N. Y. Hospital, failed to discover any condition of the bladder which could account for the troubles so long endured. *The kidneys were filled with tuberculous deposit.* There was no evidence of disease at any other point.

Again, within the last month, the exploratory perineal incision was made in a case which for several years had

presented symptoms of stone in the bladder, viz., frequent painful urination, vesical catarrh. Trouble aggravated by riding or any jarring motion; pain at such time referred especially to a point on the right side of the vesical neck. This was very marked when stepping off from a chair. Several surgeons, who had had him in charge, favored the idea of encysted stone, as a probable cause of the difficulty. This was my own opinion when three months since I first examined the case. Repeated careful exploration for stone gave only negative results; after careful consideration, and finding no source of possible reflex trouble in the urethra, and failing to obtain any evidence of disease of the kidneys, or spine or rectum, I proposed the exploratory operation. Dr. Edward L. Keyes was then called in consultation, in the course of which an examination was conducted with great care by sounds, and through the rectum and abdomen by the conjoined touch. Nothing abnormal was discovered, except a tender point corresponding to the vesical orifice of the right ureter, just the point to which the patient had referred his chief pain when jolted in any way. This was distinctly made out by means of a finger in the rectum and pressure with the opposite hand over the pubis, the position of the patient being that described on page 405.

A series of analyses of the urine was then suggested, before and after exercise, and also subsequent to a rest of several days in bed. After some two months of observation of the case, finding no evidence of disease of the kidney, and finding also that exercise always increased the amount of pus in the urine and that pain and pus were distinctly lessened by rest on the back, and that the tenderness at the mouth of the right ureter persisted; and moreover, that the difficulty was now so great that the patient could no longer attend to his business, though he was otherwise apparently in good health, Dr. Keyes coincided with me fully in the opinion that the exploratory perineal incision was now desirable. Just at this time the urine presented for the first, a very few hyaline casts. Believing, however, that under existing symptoms this was but an evidence of

increasing trouble from the bladder irritation, the operation was performed. The result of the exploration through the perineal incision was absolutely negative. Both Dr. Keyes and myself made the most careful exploration of the bladder and especially of the point where pain had been previously complained of. Nothing in the least degree abnormal was detected, excepting perhaps some peculiar thickening of the bladder wall anteriorly near the neck. Nothing was found at point of previous tenderness. The operation gave relief to the spasm as long as the urine was passed through the wound, but whenever any passed through the urethra, a severe vesical tenesmus resulted. Unfortunately, a tube into the bladder through the wound required removal on the fourth day on account of irritation evidently caused by it. The wound (May 28th, thirteen days from date of operation), remained pervious. If the patient was careful not to strain, the urine flowed through the wound, and he was comparatively free from pain, free from fever, and gaining strength. What the final effect of the operation may be, it is difficult to state, but the prospect is not flattering, especially as now, nearly two weeks since the operation, granular casts are becoming frequent in the specimens of urine examined.

The probabilities in this case appear to be that the bladder trouble is mainly, if not purely, of reflex origin, and that the kidney is in some way the source of the trouble.

Not only may the bladder trouble be found in many cases to be due to reflex irritation from some point in the kidney, urethra, the rectum or the spine, it may also be the result of enlargement of the prostate, this last even giving no positive result through a rectal examination, or through the urethra, and completely simulating an encysted stone or a tumor, or even a moveable polypoid growth within the bladder, as in the following case :

Patrick Costigan ; Charity Hospital, admitted December 2d, 1882 ; first difficulty, a retention of urine occurring suddenly, about three years before, after a

drinking bout; he was relieved by catheter. No further trouble until July, 1882, when he noticed that occasionally, during urination, his stream would be suddenly arrested, but without pain, and after a few minutes, would again flow. This difficulty continued and increased. He described the sensation to be as if a foreign body was floating about in his bladder, and when he attempted to urinate this would suddenly drop down and stop the passage. Examination with the sound gave only negative results; the straight soft catheter passes without hindrance into the bladder; urine highly ammoniacal, but contains neither pus nor other organized elements. Is unable now to pass any urine without the aid of a catheter. Examination of the urethra shows no evidence of constriction. The canal is 34 f. throughout. Examination per rectum showed apparently but little enlargement of the prostate and this appeared to merge into the bladder walls, so that its exact limits were not easily distinguishable. The abdomen was protuberant, from accumulation of adipose tissue, so that nothing could be ascertained through the rectum by the double touch. A soft catheter was passed into the bladder and to measure its capacity, sixteen ounces of water were injected, but not a drop could be voluntarily expelled by the patient. On passage of the catheter to a distance of eight and a half inches, the urine flowed freely through it, and sixteen ounces were returned. I felt satisfied that the obstruction was movable within the bladder, and was probably a polypoid growth, and after repeated efforts to seize it with the lithotrite, and at the earnest request of the patient, an exploratory incision was made through the perineum into the membranous urethra, and my finger was inserted. The perineum was quite deep. After a brief examination, I recognized the fact that my finger could just reach the superior border of an enlarged prostate which had pushed up into the bladder as shown in the accompanying sketch, the lateral lobes, falling together on the slightest attempt to urinate, formed a valve, which perfectly prevented the exit of even a drop of urine, but did not prevent the easy introduction of a soft catheter. I searched with various in-

struments, still hoping to find a polypoid growth or some other cause of obstruction to passage of urine, but exploration failed to elicit any cause of trouble beyond the valvular obstruction caused by the enlarged prostate gland. A soft rubber tube was inserted through the wound and prostatic urethra, to just within the bladder and tied in. The patient did perfectly well until the seventh day, when the wound began to assume an unhealthy appearance, apparently from irritation caused by the tube; this was removed. Spasms of the bladder occurred on subsequent efforts at urination and required free use of morphia to control. Urine drawn through catheter, introduced through perineal opening, gave only temporary relief, a very slight accumulation of urine producing desire to urinate, and spasm of the bladder resulting. Partial suppression of urine occurred on the twelfth day, and he died uræmic on the fourteenth day after the operation.

LESSON LXVIII.

Post-mortem appearances in the foregoing case—Diagram in illustration, showing position and probable influence of the prostate; also the size and location of a cyst of the bladder which was present—The case cited to show that explorations of the bladder through the urethra and rectum do not always indicate conditions in which exploratory operations through the perineum will be of service—Also to show that result of such exploration is sometimes grave, under apparently favorable conditions—Differences of opinion as to the safety of the operation—Operation not essentially different from the median operation for stone; as a rule equally perilous—Claim of Sir H. Thompson that it is similar in gravity with external urethrotomy combatted; reasons given for this opinion—Too favorable statements liable to lead to grave errors in practice—Statistics reported by Sir Henry Thompson; proportion of cases of exploratory operation where no cause of trouble was found. Cases which improved without ascertained reason, suggestive of a reflex origin of the original trouble—Idiopathic cystitis rare; in the author's experience, always due to mechanical or reflex influences, or extension of inflammation from urethra or ureters—Cases in the author's experience in illustration of this point—Necessity of examining all points capable of inducing reflex trouble in the bladder, before deciding upon an exploratory operation through the perineal incision—A full understanding by the patient of the nature and risks of the operation desirable before operation—Under proper conditions, the operation of perineal incision and digital examination of the bladder of great practical value.

The report of the post-mortem examination made by a member of the pathological staff of Charity Hospital and extracted from the Hospital records is as follows:—

"* * * * Ureters, bladder and posterior half of the penis removed *en masse*, together with a fluctuating cyst about the size of a large orange.

"*The wound of operation* presents a sloughy appearance and is covered with diphtheritic membrane (so called).

"*The Prostate* is very little enlarged, but the prostatic urethra is encroached upon by a bulging inward of the lateral halves of the prostate, and which protrude into the bladder.

"*The Bladder* is contracted, its walls about half an

inch in thickness; its internal surface prominently trabeculated, in several places, presenting small sacculi of the mucous membrane. The crests of the trabeculæ are everywhere covered with a thick, yellowish-gray membrane; about an inch above the orifice of the right ureter is an opening (24 millimetres circ.) into the cav-



Sketch showing peculiarity of prostatic hypertrophy and vesical cyst.

ity of the cyst before mentioned, which contained about ten ounces of strongly ammoniacal urine. The walls of this cyst are one-eighth inch in thickness; the mucous membrane lining them being continuous with the mucous membrane of the bladder. * * *

"*Ureters.* The right is largely dilated and courses be-

hind the cyst; the left is but moderately dilated. Both show evidences of acute inflammation. * * * " etc.

This case is cited chiefly to show that diagnosis by symptoms and by examination of the bladder through sounds, and also through digital exploration through the rectum will not afford positive information as to the cases which *will* be relieved through the exploratory perineal incision, and those that *will not*.

It shows also that there are cases where, on account of the enlargement of the prostate, the digital examination of the bladder, through the exploratory perineal incision, is impossible. It also shows that the operation for purely exploratory purposes, is occasionally fatal in its immediate results, and that, with the patient in fair condition, and presenting in life no positive evidence of any organic disease. I quite agree with Sir Henry Thompson that the operation is a simple one, easily and readily performed; but that it is, as he has stated, *only an external urethrotomy involving neither the prostate nor the bladder*, it seems to me difficult to accept. The operation does not differ in any essential particular from the perineal lithotripsy of Dolbeau, and but slightly and not essentially from that of the median operation for stone; nor do I think that it can be shown to be in any way inferior to that operation in point of risk to the patient.

In Sir Henry Thompson's first paper in the *London Lancet*, on this subject, May 6th, 1882, after a description of the mode of examining the bladder through the perineal incision, which is most complete and admirable, he claims justly for it the merit of being our most valuable aid to diagnosis in cases of obscure bladder troubles; "This being so," he asks, can digital exploration of the bladder be performed without much risk to the patient?" he replies, "I unhesitatingly answer in the affirmative," and cites cases of Sime's operation for deep urethral stricture, as parallel, and supporting his statement. The operations are quite different. In the case of simple perineal urethrotomy, no violence is done to the prostatic urethra, the prostate or the vesical neck; they are virtually untouched. In case of digital exam-

ination of the bladder through the perineal incision, the important part of the risk lies in the necessary distension required to force the finger onward to its fullest extent, and often with much urgency. In order to make an efficient examination of the bladder, through the method described by Sir Henry, even if a complete failure, such as must, with necessary uncertainties of diagnosis frequently occur, the operation is *never* less important than that for stone, where no stone is found.

Assurances as to the safety of such operations, based on statistics of external urethrotomy, appear to me likely to lead young surgeons into the possible error of resorting to such a method of diagnosis, before exhausting all known rational modes of relief, involving less peril from surgical interference than the operation of dividing the urethra in the membranous portion, and introducing the finger fully into the bladder. With all the knowledge, experience and skill of Sir Henry Thompson, in three out of four of his first list of cases of exploration of the bladder, reported in the *Lancet*, May 6th, 1882, he failed to find any reasonable cause for the trouble. In his list of fourteen similar explorations, reported in the *Lancet* of Feb. 10, 1883, he failed, in the same manner in seven. Few surgeons, indeed, could hope for anything like the good fortune of discovering foreign bodies in eight cases out of eighteen, and relieving them from troubles which otherwise must have caused a fatal issue. And then, quite a large proportion of the remaining ten cases were relieved by the operation without anyone quite understanding the reason for such improvement.

May it not be wise, in considering this curious fact, to revert to the case of spasmodic stricture of seventeen years duration, whose troubles were not relieved until the forcible distension of the membranous urethra? and also to the case, where the difficulty produced profound bladder trouble, and which was repeatedly, and promptly, and finally permanently relieved by over distension of the membranous urethra? And also, the case, where the most eminent genito-urinary surgeons in America, in Great Britain, and in France had repeatedly examined for stone, and for tumor at intervals, during a

period of over twenty years, and had failed to find any, and where, finally, the only cause for the great and prolonged suffering, terminating finally in death, was a chronic spasm of the bladder, and the cause for which no explanation could be found, except a contraction of the urethra, within an inch of the external orifice!

It is a practical point of much value to appreciate the fact that *idiopathic* cystitis ever occurring is very rare. In my experience it is always the result of extension of inflammation in the urethra, or from some mechanical irritation within the bladder, or from reflex irritation from some point outside the bladder, such as would be afforded by stricture of the urethra at some point, or from disease of the spine, kidneys, or rectum.

With such facts as these, and many more equally significant of the dependence of obscure bladder troubles or reflex irritations outside of the bladder, which cannot be doubted, may it not, then, be reasonably asked of surgeons everywhere, that in every case of obscure bladder trouble, the urethra shall be explored with the understanding that any contraction of its calibre, congenital or acquired, including all contractions at the urethral orifice, shall be accepted as a possible cause of the trouble, and *removed* before deciding upon the performance of the external perineal incision, and the introduction of the finger through it into the bladder for the purpose of aiding the diagnosis.

While I have not had anything like the proportionate success which has fallen to the lot of Sir Henry Thompson in discovering foreign bodies through the exploratory operation, so warmly advocated by that distinguished surgeon, I have yet had sufficient to make me resort to it in circumstances under which I have already recommended and performed it, viz., where through careful, intelligent and patient examination, every suspected reflex source of trouble had been, as far as possible, removed, and where, with a full understanding of the possible advantages and of the necessary doubts of success in the search, and the surgical risks of the operation, the patient consented to its performance. I am

also fully persuaded that while the risks of the operation of exploratory perineal urethrotony are identical in theory and practice with median lithotomy, the operation is of great practical value, and a justifiable one under proper circumstances.

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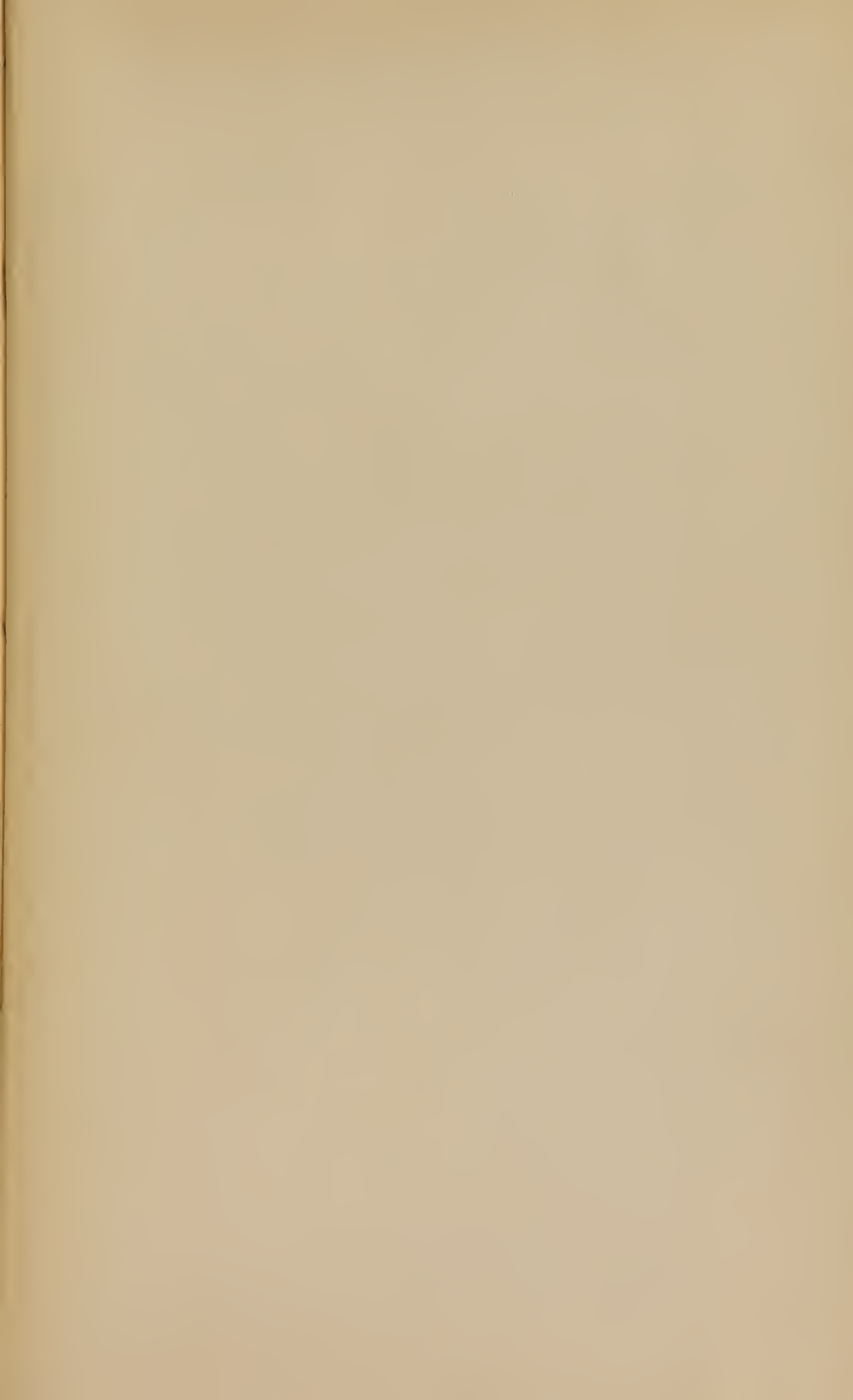
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